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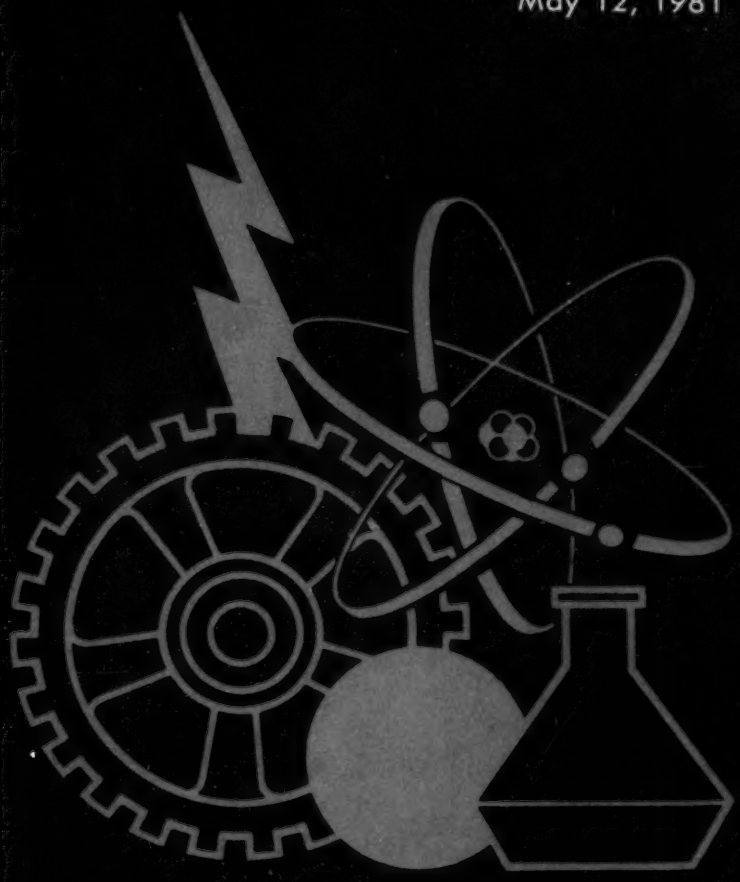

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May 12, 1981 Volume 1006 Number 2

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1006 OG 14
Removal from Register	1006 OG 14
Reissue Applications Filed	1006 OG 21
Patent Certificates of Correction	1006 OG 22
Dedications	1006 OG 22
Disclaimers	1006 OG 22
Disclaimer and Dedication	1006 OG 22
National Technical Information Service	1006 OG 22
Reference Collections of U.S. Patents	1006 OG 25
Condition of Patent Applications	1006 OG 26
Reissue Patents Granted (30,605)	451
Plant Patents Granted (4,711)	455
Patents Granted	
General and Mechanical (4,266,297)	457
Chemical (4,266,938)	675
Electrical (4,267,398)	809
Design Patents Granted (259,145)	883
Index of Patentees	PI 1
Indices of Reissue, Design and Plant Patentees	PI 46
Classification of	
Patents (Including Reissues)	PI 49
Designs and Plants	PI 52
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 53
Designs and Plants	PI 54
Change of Address Form and Subscription Order Form	Back Page

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the list of PCT member countries and the most recent PCT rule changes see the notice appearing at 1001 O.G. 14 in the OFFICIAL GAZETTE of December 9, 1980.

Note that the international fees have been increased as of January 1, 1981. The current schedule of fees is as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International fees	
Basic fee (first 30 pages)	265.00
Basic supplemental fee (for each sheet over 30)	5.00
Designation fee	64.00

SIDNEY A. DIAMOND,
January 13, 1981. *Commissioner of Patents and Trademarks.*

Removal From Register

Pursuant to the provisions of 37 C.F.R. 1.347, a letter was directed on Nov. 19, 1980, to the last post office address furnished to the Committee on Enrollment by each of the persons whose name and address appear on the following list. With respect to some of the letters, no reply was received within the period of forty-five (45) days therein set. Other letters were returned by the Post Office with notations to the effect that the addressee was deceased, unknown, or had moved and left no forwarding address.

Accordingly, the names of the following persons will be removed from the Register of Patent Attorneys and Patent Agents, effective June 30, 1981.

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Apr. 14, 1981. *Chairman, Committee on Enrollment*

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REISSUE APPLICATION FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,142,888, Re. S.N. 237,513, Filed Feb. 23, 1981, Cl. 075/201, METHOD FOR HOT CONSOLIDATING POWDER, Walter J. Rozmus, Owner of Record: *Kelsey-Hayes Co., Romulus, Mich.*, Attorney or Agent: Harold W. Milton, Jr., Ex. Gp.: 223

PATENT NOTICES

Certificates of Correction for the Week of May 12, 1981

Re. 30,507	4,222,761	4,238,368	4,247,039
D. 257,740	4,222,763	4,238,391	4,247,165
3,744,947	4,223,111	4,238,417	4,247,223
3,810,539	4,224,108	4,238,745	4,247,257
3,877,375	4,225,610	4,238,772	4,247,626
4,000,151	4,225,850	4,238,851	4,247,763
4,006,218	4,226,394	4,239,325	4,247,907
4,018,211	4,226,835	4,239,710	4,247,932
4,050,680	4,226,846	4,240,298	4,248,078
4,052,552	4,226,986	4,240,432	4,248,254
4,055,602	4,227,119	4,240,775	4,248,395
4,083,930	4,227,847	4,240,824	4,248,601
4,102,131	4,230,186	4,240,958	4,248,906
4,135,329	4,230,283	4,241,042	4,248,981
4,155,878	4,231,383	4,241,080	4,249,505
4,157,448	4,231,886	4,241,148	4,249,572
4,159,238	4,232,078	4,241,192	4,249,878
4,173,843	4,232,187	4,241,981	4,250,477
4,185,598	4,232,207	4,242,146	4,250,544
4,189,427	4,232,818	4,242,176	4,250,558
4,194,110	4,233,470	4,242,361	4,250,629
4,199,571	4,234,347	4,242,756	4,250,809
4,201,351	4,234,668	4,243,235	4,250,822
4,201,705	4,234,930	4,243,295	4,251,054
4,206,809	4,235,152	4,243,347	4,251,134
4,211,884	4,235,407	4,243,474	4,251,137
4,213,801	4,235,431	4,243,686	4,251,139
4,214,691	4,235,693	4,243,745	4,251,387
4,214,966	4,235,708	4,243,825	4,251,456
4,215,056	4,235,937	4,243,978	4,251,549
4,217,048	4,236,100	4,244,673	4,251,610
4,217,264	4,236,329	4,244,813	4,251,883
4,217,592	4,237,134	4,244,967	4,251,903
4,217,778	4,237,388	4,245,342	4,252,444
4,218,353	4,237,417	4,245,352	4,252,906
4,218,451	4,237,439	4,245,613	4,253,110
4,218,919	4,237,597	4,245,865	4,253,380
4,219,609	4,237,837	4,246,145	4,253,676
4,219,740	4,237,865	4,246,157	4,253,752
4,221,377	4,237,875	4,246,353	4,253,913
4,222,044	4,238,239	4,246,538	4,254,136
4,222,589	4,238,305	4,247,028	

Dedications

3,807,344.—*Dante Giacosa,* Turin, Italy, OUTBOARD MOTOR HAVING A WATER JET IMPELLOR UNIT. Patent dated Apr. 30, 1974. Dedication filed Jan. 13, 1981, by the assignee, *FIAT S.p.A.*

Hereby dedicates to the Public the term of the patent subsequent to December 24, 1980.

3,842,787.—*Dante Giacosa,* Turin, Italy. WATER JET IMPELLOR UNIT HAVING A STEERING CONTROL DEVICE. Patent dated Oct. 22, 1974. Dedication filed Jan 13, 1981, by the assignee, *FIAT S.p.A.*

Hereby dedicates to the Public the term of the patent subsequent to December 24, 1980.

Disclaimers

3,958,685.—*David Ian McDonald; George William Sederberg; Gary David Stephenson* and *James Gordon Wiatt,* Cincinnati, Ohio. COUPLING FOR HANDLING WORKPIECE, CONVEYOR COMBINED THEREWITH, AND METHOD. Patent dated May 25, 1976. Disclaimer filed Jan. 12, 1981, by the assignee, *Cincinnati Milacron Inc.*

Hereby enters this disclaimer to claims 1, 2, 3 and 4 of said patent.

4,050,806.—*Seiichi Miyakawa* and *Tadahiro Eda,* Tokyo, Japan. METHOD AND APPARATUS FOR ELECTRICALLY BIASING DEVELOPING ELECTRODE OF ELECTROPHOTOGRAPHIC DEVICE. Patent dated Sept. 27, 1977. Disclaimer filed Nov. 21, 1980, by the assignee, *Ricoh Co., Ltd.*

Hereby enters this disclaimer to claims 1, 2, 3, 4, 5 and 22 of said patent.

4,087,647.—*Milton Luther Embree,* Reading, Pa. and *John Francis O'Neill,* Boulder, Colo. CIRCUIT FOR SUPPLYING DIRECT CURRENT TO TELEPHONE STATION SETS. Patent dated May 2, 1978. Disclaimer filed Mar. 17, 1981, by the assignee, *Bell Telephone Laboratories, Inc.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

4,107,173.—*David A. Berges,* Wayne, Pa. 3-SULFOMETHYL-1, 2, 4-TRIAZOLE-5-THIOL AND ITS ALKALI METAL SALTS. Patent dated Aug. 15, 1978. Disclaimer filed Feb. 11, 1981, by the assignee, *SmithKline Corp.*

Hereby enters this disclaimer to claims 1, 2 and 3 of said patent.

4,164,947.—*John E. Wilson,* Colona, Ill. ROTOR FOR AN AXIAL FLOW ROTARY SEPARATOR. Patent dated Aug. 21, 1979. Disclaimer filed Mar. 6, 1981, by the assignee, *Deere & Co.*

Hereby enters this disclaimer to all the claims, 1–14 of said patent.

4,202,614.—*Donald M. Harvey,* Webster, N.Y. PHOTOGRAPHIC CAMERAS. Patent dated May 13, 1980. Disclaimer filed Feb. 9, 1981, by the assignee, *Eastman Kodak Co.*

Hereby enters this disclaimer to claims 1 through 3 of said patent.

Disclaimer and Dedication

4,017,185.—*Vernon L. Chupp,* Los Altos, Calif. OPTICAL ARRANGEMENTS FOR COUPLING MONOCHROMATORS WITH EXTERNAL SYSTEMS. Patent dated Apr. 12, 1977. Disclaimer and Dedication filed Jan. 21, 1981, by the assignee, *Varian Associates, Inc.*

Hereby disclaims and dedicates to the Public all claims of said patent.

National Technical Information Services

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include the patent number.

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DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patenis
National Technical Information Service
U.S. Department of Commerce.

U.S. DEPARTMENT OF THE ARMY/OTJAG
Chief, Intellectual Property Division
Room 2D 444, Pentagon
Washington, D.C. 20310

Patent application 6–148,653. Acousto-Optic Time Integrating Correlator. Filed May 12, 1980.

Patent application 6–153,461. Device to De-Spin Objects with Very High Spin. Filed May 27, 1980.

Patent application 6–153,462. Optical Fuze with Improved Range Function. Filed May 27, 1980.

Patent application 6–155,713. Multilayer via Resistors. Filed June 2, 1980.

Patent application 6–156,458. Power Supply Conditioner for Fluidic Systems. Filed June 4, 1980.

Patent application 6–157,145. Soft Recovery Method for Gunfired Shells. Filed June 6, 1980.

Patent application 6–157,758. Microwave Controlled Field Effect Switching Device. Filed June 9, 1980.

Patent application 6–158,556. Multi-Caliber Projectile Soft Recovery System. Filed June 11, 1980.

Patent application 6–161,793. Flueric Density and Force Sensor. Filed June 23, 1980.

Patent application 6–169,004. Apparatus for Eliminating Power Source Rise Time Effects in a Time Fuze System. Filed July 15, 1980.

Patent application 6–188,798. Dual Frequency Range Antenna System. Filed Sept. 19, 1980.

Patent application 6–193,332. D. C. - A. C. Inverter Protection. Filed Oct. 1, 1980.

Patent application 6–196,508. Method of Fabricating Acceleration Resistant Crystal Resonators and Acceleration Resistant Crystal Resonators so Formed. Filed Oct. 14, 1980.

Patent application 6–198,395. High Power Gyrotron (OSC) or Gyrotron Type Amplifier Using Light Weight Focusing for Millimeter Wave Tubes. Filed Oct. 20, 1980.

Patent application 6–198,557. High Impedance Fast Voltage Probe. Filed Oct. 20, 1980.

Patent application 6–200,627. Contactless Resistivity Measurement Method. Filed Oct. 27, 1980.

Patent 4,199,730. Double Peaked Amplifier. Filed Sept. 28, 1949. Patented Apr. 22, 1980. Not available NTIS.

Patent 4,201,136. Safety Control for Electronic Circuits. Filed Jan. 19, 1951. Patented May 6, 1980. Not available NTIS.

Patent 4,204,198. Radar Analog to Digital Converter. Filed Dec. 20, 1977. Patented May 20, 1980. Not available NTIS.

Patent 4,204,212. Conformal Spiral Antenna. Filed Dec. 6, 1978. Patented May 20, 1980. Not available NTIS.

Patent 4,205,316. Enhanced Accuracy Doppler Fuze. Filed Mar. 16, 1967. Patented May 27, 1980. Not available NTIS.

Patent 4,205,382. Binary Integrator for Fixed Cell Radar Alarm Data. Filed Feb. 2, 1979. Patented May 27, 1980. Not available NTIS.

Patent 4,207,841. Dipole Antenna for Proximity Fuze. Filed May 19, 1945. Patented June 17, 1980. Not available NTIS.

Patent 4,211,487. Method and Apparatus for Determining Aerosol Size Distributions. Filed Jan. 22, 1979. Patented July 8, 1980. Not available NTIS.

Patent 4,213,697. Phase Measuring Device. Filed Nov. 6, 1978. Patented July 22, 1980. Not available NTIS.

Patent 4,214,240. Coded Pulse Radar Fuze. Filed Dec. 3, 1964. Patented July 22, 1980. Not available NTIS.

Patent 4,214,533. Annular Alternator for Artillery. Filed June 2, 1978. Patented July 29, 1980. Not available NTIS.

Patent 4,214,534. Command Fuzing System. Filed June 30, 1969. Patented July 29, 1980. Not available NTIS.

Patent 4,216,475. Digital Beam Former. Filed June 22, 1978. Patented Aug. 5, 1980. Not available NTIS.

Patent 4,223,345. Method and Apparatus for Camouflage Signature Measurement. Filed June 20, 1979. Patented Sep. 16, 1980. Not avaiable NTIS.

U.S. DEPARTMENT OF AGRICULTURE
Program Agreements and Patent Branch
Administrative Service Division Federal Building
Science & Education Administration
Hyattsville, Md. 20782

Patent application 6–202,032. Method and Apparatus for Automatic Egg Mass Counting. Filed Oct. 29, 1980.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health
Chief, Patent Branch
Westwood Building
Bethesda, Md. 20205

Patent 4,238,472. Radioimmunoassey for Chlorinated Dibenzo-P-Dioxins. Filed Nov. 27, 1978. Patented Dec. 9, 1980. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY
Director, Navy Patent Program/
Patent Council for the Navy
Office of Naval Research
Code 302
Arlington, Va. 22217

Patent application 6–088,255. Electrical Cable Molded Seal Assembly. Filed Oct. 23, 1980.

Patent application 6–155,830. Lead Germanate Bonded PZT Composite Piezoelectrics. Filed June 2, 1980.

Patent application 6–157,134. Measurement and Compensation System for Beam Forming Array. Filed June 6, 1980.

Patent application 6–190,111. Master Buoy System for Acoustic Array Deployment, Using Underwater Glide Bodies Remotely Launched from a Submerged Pod. Filed Sept. 24, 1980.

Patent application 6–195,991. Biguanide Diperchlorate and Process for Preparation Thereof. Filed Oct. 10, 1980.

Patent application 6–196,225. A Radar Radiometer and Its Use. Filed Oct. 14, 1980.

Patent application 6–197,716. In-Situ Particulate Titanium Carbide Surface Composition in Titanium Alloy Matrix. Filed Oct. 16, 1980.

Patent application 6–199,156. Weapons Training Apparatus for Simulating Long Range Weapons. Filed Oct. 21, 1980.

Patent application 6-199,406. Marksmanship Training Device for Simulating Long Range Weapons. Filed Oct. 22, 1980.

Patent application 6-206,331. Absolute Reflectometer. Filed Nov. 13, 1980.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters
NASA Code GP-4
Washington, D.C. 20546

Patent application 6-183,706. Heat Pipe Honeycomb Panel. Filed Sept. 3, 1980.

Patent application 6-191,748. Pyroelectric Detector Arrays. Filed Sept. 29, 1980.

U.S. DEPARTMENT OF COMMERCE

National Tech. Information Service
Office of Government Inventions and Patents
Springfield, Va. 22161

Patent application 807,129. Novel Beta-Endorphins, Intermediates Therefor, and Compositions and Methods Employing Said Beta-Endorphins. Filed June 16, 1977.

Patent application 807,209. Novel Tetrapeptides, Intermediates Therefor, and Compositions and Methods Employing Said Tetrapeptides. Filed June 16, 1977.

Patent application 807,229. Novel Nonacosapeptides, Intermediates Therefor, and Compositions and Methods Employing said Nonacosapeptides. Filed June 16, 1977.

Patent 4,127,517. Novel Docosapeptides, Intermediates Therefor and Pharmaceutical Compositions and Methods Employing Said Docosapeptides. Filed June 16, 1977. Patented Nov. 28, 1978. Not available NTIS.

Patent 4,127,518. Novel Derivatives of Gamma-Endorphins, Intermediates Therefor, and Compositions and Methods Employing Said Derivatives. Filed June 16, 1977. Patented Nov. 28, 1978. Not available NTIS.

Patent 4,127,519. Octadecapeptides, Intermediates Therefor, and Compositions and Methods Employing Said Octadecapeptides. Filed June 16, 1977. Patented Nov. 28, 1978. Not available NTIS.

Patent 4,127,520. Novel Nonadecapeptides, Intermediates Therefor, and Compositions and Methods Employing Said Nonadecapeptides. Filed June 16, 1977. Patented Nov. 28, 1978. Not available NTIS.

Patent 4,127,521. Novel Octacosapeptides, Intermediates Therefor and Pharmaceutical Compositions and Methods Employing Said Octacosapeptides. Filed June 16, 1977. Patented Nov. 28, 1978. Not available NTIS.

Patent 4,127,522. Novel Triacontapeptides, Intermediates Therefor and Pharmaceutical Compositions and Methods Employing Said Triacontapeptides. Filed June 16, 1977. Patented Nov. 28, 1978. Not available NTIS.

Patent 4,127,523. Novel Undecapeptides, Intermediates Therefor, and Compositions and Methods Employing Said Undecapeptides. Filed June 16, 1977. Patented Nov. 28, 1978. Not available NTIS.

Patent 4,127,524. Novel Dodecapeptides, Intermediates Therefor, and Compositions and Methods Employing Said Dodecapeptides. Filed June 16, 1977. Patented Nov. 28, 1978. Not available NTIS.

Patent 4,127,525. Novel Tridecapeptides, Intermediates Therefor, and Compositions and Methods Employing Said Tridecapeptides. Filed June 16, 1977. Patented Nov. 28, 1978. Not available NTIS.

Patent 4,127,526. Novel Tetradecapeptides, Intermediates Therefor, and Compositions and Methods Employing Said Tetradecapeptides. Filed June 16, 1977. Patented Nov. 28, 1978. Not available NTIS.

Patent 4,127,527. Novel Pentadecapeptides, Intermediates Therefor, and Compositions and Methods Employing Said Pentadecapeptides. Filed June 16, 1977. Patented Nov. 28, 1978. Not available NTIS.

Patent 4,127,528. Novel Derivatives of Alpha-Endorphin, Intermediates Therefor and Compositions and Methods Employing Said Derivatives. Filed June 16, 1977. Patented Nov. 28, 1978. Not available NTIS.

Patent 4,127,529. Novel Eicosapeptides, Intermediates Therefor and Pharmaceutical Compositions and Methods Employing Said Eicosapeptides. Filed June 16, 1977. Patented Nov. 28, 1978. Not available NTIS.

Patent 4,127,530. Novel Heneicosapeptides, Intermediates Therefor and Pharmaceutical Compositions and Methods Employing Said Heneicosapeptides. Filed June 16, 1977. Patented. Nov. 28, 1978. Not available NTIS.

Patent 4,127,531. Novel Hexapeptides, Intermediates Therefor, and Compositions and Methods Employing Said Hexapeptides. Filed June 16, 1977. Patented Nov. 28, 1978. Not available NTIS.

Patent 4,127,532 Novel Heptapeptides, Intermediates Therefor, and Compositions and Methods Employing Said Heptapeptides. Filed June 16, 1977. Patented Nov. 28, 1978. Not available NTIS.

Patent 4,127,533. Novel Octapeptides, Intermediates Therefor, and Compositions and Methods Employing Said Octapeptides. Filed June 16, 1977. Patented Nov. 28, 1978. Not available NTIS.

Patent 4,127,534. Novel Tripeptides, Intermediates Therefor and Pharmaceutical Compositions and Methods Employing Said Tripeptides. Filed June 16, 1977. Patented Nov. 28, 1978. Not available NTIS.

Patent 4,127,535. Novel Dipeptides, Intermediates Therefor, and Compositions and Methods Employing Said Dipeptides. Filed June 16, 1977. Patented Nov. 28, 1978. Not available NTIS.

Patent 4,127,536. Novel Tricosapeptides, Intermediates Therefor and Pharmaceutical Compositions and Methods Employing Said Tricosapeptides. Filed June 16, 1977. Patented Nov. 28, 1978. Not available NTIS.

Patent 4,127,537. Novel Tetracosapeptides, Intermediates Therefor and Pharmaceutical Compositions and Methods Employing Said Tetracosapeptides. Filed June 16, 1977. Patented Nov. 28, 1978. Not available NTIS.

Patent 4,127,538. Novel Pentacosapeptides, Intermediates Therefor and Pharmaceutical Compositions and Methods Employing Said Pentacosapeptides. Filed June 16, 1977. Patented Nov. 28, 1978. Not available NTIS.

Patent 4,127,539. Novel Hexacosapeptides, Intermediates Therefor and Pharmaceutical Compositions and Methods Employing Said Hexacosapeptides. Filed June 16, 1977. Patented Nov. 28, 1978. Not available NTIS.

Patent 4,127,540. Novel Derivatives of δ-Endorphins, Intermediates therefor, and Compositions and Methods Employing Said Derivatives. Filed June 16, 1977. Patented Nov. 28, 1978. Not available NTIS.

Patent 4,127,541. Novel Decapeptides, Intermediates Therefor, and Compositions and Methods Employing Said Decapeptides. Filed June 16, 1977. Patented Nov. 28, 1978. Not available NTIS.

Patent 4,139,504. Novel Nonapeptides, Intermediates Therefor, and Compositions and Methods Employing Said Nonapeptides. Filed June 16, 1977. Patented Feb. 13, 1979. Not available NTIS.

Patent 4,180,501. Bis (Polypeptide) Derivatives of Enkephalin. Filed June 16, 1978. Patented Dec. 25, 1979. Not available NTIS.

Patent 4,213,968. Enkephalin Derivatives. Filed June 5, 1978. Patented July 22, 1980. Not available NTIS.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

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Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

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Alabama	Birmingham Public Library	(205) 254-2555
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	Sacramento: California State Library	(916) 323-4572
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
	University Park: The Pennsylvania State Libraries	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF Mar. 21, 1981

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	2-07-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Aikaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-11-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	10-22-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	2-01-80
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-01-80
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—VACANT ..... Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	7-10-79
SPECIAL LAWS ADMINISTRATION, GROUP 220—VACANT ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	9-05-79
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—VACANT ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-14-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	7-09-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-21-78
DESIGN, GROUP 290—C. D. QUARFORTH, Director ..... Industrial Arts; Household, Personal and Fine Arts.	2-12-79
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	10-29-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	11-01-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	9-18-77
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	7-27-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-19-79

Expiration of patents: The patents within the range of numbers indicated below expire during Feb. 1981, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,122,749 to 3,127,613, inclusive

Plant Patents ..... Numbers 2,368 to 2,388, inclusive

REISSUES

MAY 12, 1981

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,605

GOOSE AND DUCK BLIND

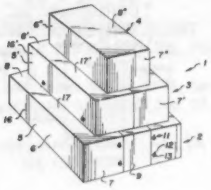
Gordon Witt, Box 252, Millet, Alberta, Canada

Original No. 4,123,869, dated Nov. 7, 1978, Ser. No. 845,346, Oct. 25, 1977. Application for reissue Feb. 27, 1980, Ser. No. 125,247

Claims priority, application Canada, Jun. 12, 1978, 305270

Int. Cl.³ A01M *31/00*

U.S. Cl. 43—1 **5 Claims**



5. A game hunting blind comprising:

a box-like cap element having a top wall and side and end walls;

first and second pairs of box-like elements, each having a side wall, two end walls and a partially cut-away top wall;

means for disengagably connecting the first pair of box-like elements to form a base tier;

means for hingably and disengagably connecting each of the second pair of box-like elements with one of the base tier elements to form a middle tier wherein each of said second pair of elements rests on the partially cut-away top wall of one of the base tier elements, said hinge connection being operative to permit the middle tier elements to be pivoted outwardly; and

means for hingably and disengagably connecting the cap element with a middle tier element to complete the formation of a pyramid-like structure wherein the cap element rests on the partially cut away top walls of the middle tier elements, said hinge connection being operative to permit the cap element to be pivoted outwardly, said box-like elements, when assembled in pyramid-like fashion, enclosing a space sufficient to house a hunter.

Re. 30,606

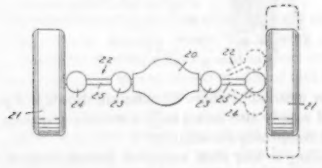
TELESCOPING UNIVERSAL JOINTS

Everett H. Sharp, 344 E. Maryknoll, Rochester, Mich. 48063

Original No. 4,068,499, dated Jan. 17, 1978, Ser. No. 652,511, Jan. 26, 1976. Application for reissue Nov. 13, 1978, Ser. No. 960,609

Int. Cl.³ F16D *3/02*

U.S. Cl. 64—8 **75 Claims**



69. A telescoping universal joint comprising

a driving member,

a driven member,

torque transmitting means between the driving and driven members,

and means for limiting relative axial outward movement between said members and for maintaining said members in fixed axial relationship while limiting said axial movement between said members as the joint rotates at any angular alignment of the members,

means for enclosing and sealing one end of said joint comprising a pair of cooperating surfaces, one of which is mounted for axial movement relative to the member which carries it and is urged axially into contact with its cooperating surface,

one of said cooperating surfaces being permitted limited radial movement relative to the member which carries it.

Re. 30,607

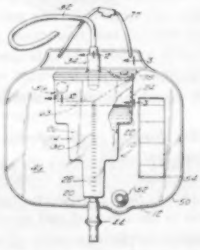
COMBINATION URINE METER AND DRAINAGE RECEPTACLE

James G. Manschot, Eagle; Byron L. Mather, and Larry A. Salvadori, both of Milwaukee, all of Wis., assignors to Piastronics, Inc., Milwaukee, Wis.

Original No. 4,095,589, dated Jun. 20, 1978, Ser. No. 573,853, May 20, 1975. Application for reissue Jun. 18, 1979, Ser. No. 49,060

Int. Cl.³ A61B *19/00*

U.S. Cl. 128—762 **14 Claims**



1. A combination urine meter and drainage receptacle comprising:

a liquid meter of semi-rigid material having at least one volume calibrated chamber and an inlet opening through which liquid may be introduced into the interior thereof, said meter having an upper portion in which said inlet opening is located and a lower portion in which said liquid can accumulate;

a liquid draining receptacle in the form of a bag made of flexible material, said bag having an upper portion positioned adjacent said meter upper portion; and

a liquid communication means for said meter and drainage receptacle comprising a liquid conduit extending from the upper portion of said meter to the upper portion of said drainage receptacle, said liquid communication means adapted to permit relative movement of said meter with respect to said drainage receptacle to thereby facilitate drainage of liquid from the interior of the meter through said liquid conduit and into said drainage receptacle by simply tilting said meter with respect to said drainage receptacle, said liquid communication means including a semi-rigid tubular assembly fastened at one end to said meter and fastened at its other end to said liquid drainage receptacle, said semi-rigid tubular assembly comprised of a tubular fitting having a flange sealed to one wall of said liquid drainage receptacle, said tubular fitting having a pair of concentrically spaced circular walls providing a

groove therebetween, said tubular assembly further including a collar formed integrally with one wall of said meter, said collar being sealed in said groove by said tubular fitting to thereby provide a fluid tight liquid conduit between said meter and said receptacle.

Re. 30,608

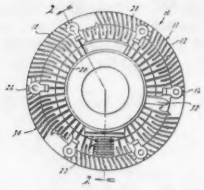
TEMPERATURE RESPONSIVE COUPLING

Warren G. Bopp, Farmington Hills, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Original No. 3,972,399, dated Aug. 3, 1976, Ser. No. 528,187, Nov. 29, 1974. Application for reissue Nov. 7, 1977, Ser. No. 849,193

Int. Cl.[2] F16D *35/00, 43/25*

U.S. Cl. 192—58 B **7 Claims**



19. A viscous coupling comprising:

a first rotatable member defining a housing rotatable about an axis;

a second member disposed in the interior of said housing and rotatable about said axis;

a working chamber defined by said members and containing an inventory of viscous fluid for transmitting torque from one of said members to the other of said members by fluid shear stress in response to relative rotation of said members;

an annular reservoir defined by said first member and the outer diameter of said reservoir being defined by an annular wall portion projecting axially outward from said housing;

first and second passage means for communicating said working chamber with said reservoir;

means for pumping fluid from said working chamber to said reservoir via said first passage;

an arcuate valving member having one end pivotally connected to said housing and the other end associated with said second passage means, said valving member moveable between a first position wherein said other end covers said second passage means and blocks fluid flow from said reservoir to said working chamber and a second position wherein said other end uncovers said second passage means and allows fluid flow from said reservoir to said working chamber; and

temperature sensing means for sensing temperature changes exterior of said coupling and mounted on said annular wall portion, said sensing means including means containing a liquid-solid phase change substance having a high coefficient of expansion during phase change and operative to move said valving member between said first and second positions in response to said phase change occurring over a predetermined temperature range, and said sensing means including a piston connecting said phase change substance with said arcuate valving member and operative to pivotally move said valving member to said second position in response to said substance changing from a solid to a liquid.

Re. 30,609

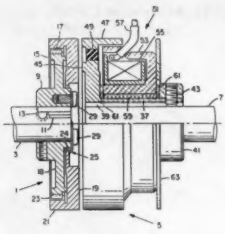
RESILIENT CONNECTION BETWEEN INNER AND OUTER POLES ON ELECTROMAGNETIC CLUTCH

Donald L. Miller, Horseheads, N.Y., assignor to Facet Enterprises, Inc., Tulsa, Okla.

Original No. 3,978,953, dated Sep. 7, 1976, Ser. No. 589,816, Jun. 24, 1975. Application for reissue Nov. 28, 1977, Ser. No. 855,119

Int. Cl.[3] F16D *27/10*

U.S. Cl. 192—84 C **3 Claims**



7. An electromagnetic clutch comprising:

a driven clutch member;

a driving clutch member mounted adjacent said driven clutch member for cooperation with said driven clutch member;

an armature mounted to one of said members;

electromagnetic means mounted to the other of said members, said electromagnetic means further comprising an annular inner pole member; an annular outer pole member surrounding said inner pole member for rotation therewith; and magnetically non-permeable resilient means for connecting the inner and outer pole members to provide relative movement between said inner and outer pole members to enable both pole members to engage said armature with substantially equal engaging force.

Re. 30,610

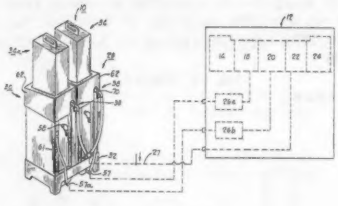
FLUID MIXING AND DISPENSING SYSTEM

Leonard W. Gacki, White Plains, and Robert E. Daly, Farmingdale, both of N.Y., assignors to Picker Corporation, Cleveland, Ohio

Original No. 4,103,358, dated Jul. 25, 1978, Ser. No. 609,957, Sep. 3, 1975. Application for reissue Feb. 9, 1979, Ser. No. 10,812

Int. Cl.[3] B01F *15/02, 15/04*

U.S. Cl. 366—153 **50 Claims**



18. [The method of claim **17**, wherein the step of providing a first fluid supply also includes:] *A method of mixing fluids in a reservoir, comprising the steps of:*

(a) providing a first fluid supply in communication with the reservoir under the influence of gravity; including:

i. disposing a first fluid in a vessel;

ii. positioning the vessel overlying the reservoir;

[(a)] *iii.* disposing a container above the reservoir, the container having a plurality of openings; and

[(b)] *iv.* inserting a plurality of vessels into the container, each vessel being disposed adjacent an opening[.];

(b) disposing a fluid release assembly intermediate the first fluid supply and the reservoir;

(c) providing a second fluid supply in communication with the reservoir, the fluid release assembly being disposed intermediate the second fluid supply and the reservoir;

(d) sensing the presence of a predetermined amount of fluid in the first fluid supply and in the reservoir; and thereafter

(e) introducing fluid from the second fluid supply to the reservoir only if the predetermined amount of fluid in the supply is present, the flow of the second fluid actuating the fluid release assembly to introduce fluid from the first fluid supply to the reservoir.

Re. 30,611

TRUCK MOUNTED HOIST

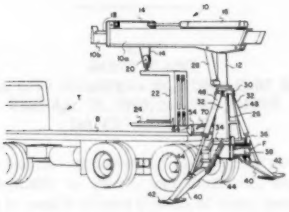
Joachim H. R. Wappler, 317 Kenollia Rd., Mississauga, Ontario, Canada

Original No. 4,111,316, dated Sep. 5, 1978, Ser. No. 786,281, Apr. 11, 1977. Application for reissue Jun. 27, 1979, Ser. No. 52,462

Claims priority, application Canada, Apr. 13, 1976, 250198

Int. Cl.³ B60P *1/54*

U.S. Cl. 414—542 **3 Claims**



1. Hoist apparatus of the type adapted to be mounted on a truck adjacent the truck bed, leaving the truck bed clear, for use in unloading or loading the truck or the like, and comprising;

boom means;

hoist means on said boom means;

a vertical support column, said boom means being swingably mounted on the upper end of said column, and said support column being rotatably mounted for rotating said boom means and said column in unison;

drive gear means located adjacent the lower end of a said support column for rotating the same;

rack means meshing with said drive gear means and moveable to and fro along a linear path relative to said drive gear;

a non-rotatable vertically oriented housing means supporting and enclosing a portion of said vertical column and said gear means adapted for mounting in fixed position on a portion of said truck, and supporting said vertical column along a substantial portion of its length;

power operated means connected with said rack means, and mounted on said housing *means* for driving said rack means to and fro thereby rotating said support column and said boom means in unison on either side of said truck bed further said power operated means includes a cylinder means; a protective shield member covering a portion of said power operated means, said shield member being in the shape of a shell having a semi-circular cross section and covered at each end by a plate having the shape of a half circle such that the plane of the open portion of said shield member bisects said cylinder means along its longitudinal axis, said rack means comprises an elongated linear rack member having tooth means on one side, adapted to engage said drive gear means, the other side of said rack member being flat and smooth, said rack member being located within said cylinder means and moving along a predetermined linear reciprocal path to and fro therewithin, and including a pressure pad located within said cylinder means and engaging said flat, smooth side of said rack member for holding the same with said tooth means in engagement with said drive gear means, said pad having a substantially rectangular contact surface with said flat, smooth side of said rack member, and adjustment means including two adjustable threaded means for adjustment of the pressure applied by said pressure pad on said rack member, further said protective shield member having an opening to permit access to said adjustment means;

supporting frame members forming part of said housing means for supporting *said* vertical column; [and]

attachment brackets extending from a lower portion of said housing means at an angle downwardly on opposite sides thereof;

ground engaging strut means swingably attached to the lower outer ends of said [frame members] *attachment* brackets and,

power cylinder means extending between the upper end of said housing means [above said frame means] and respective said strut means, operation of said power cylinder means swinging said strut means between upwardly angled disengaged positions and downwardly angled ground engaging positions, said power cylinder means thereby directly supporting and stabilizing the upper end of said vertical housing *means* and said column enclosed therein against heavy loads applied at the end of said boom means, when said boom means are swung outwardly on one or the other side of said truck.

Re. 30,612

POLYURETHANE-MODIFIED ALKYD RESIN

Robert R. Harris, Burnham, and Warren J. Pollack, Carpentersville, both of Ill., assignors to International Minerals & Chemical Corp., Terre Haute, Ind.

Original No. 4,116,902, dated Sep. 26, 1978, Ser. No. 839,718, Oct. 5, 1977. Application for reissue Nov. 13, 1979, Ser. No. 93,357

Int. Cl.³ C09D *3/64, 5/08*

U.S. Cl. 260—22 TN **8 Claims**

1. An air-drying, water-soluble, polyurethane-modified alkyd resin having superior corrosion resistance and hardness obtained by the steps of:

(a) (1) forming an alkyd resin by melting together at 175° F. a mixture of trimethylpentanediol 1170 parts, linoleic acid 1848 parts, and phthalic anhydride 1465 parts,

(2) with agitation adding thereto trimethylolethane 698 parts, dimethylolpropionic acid 567 parts, and dibutyl tin oxide 6.5 parts,

(3) heating the mixture slowly under a nitrogen blanket to 210° C. until an acid number of 52–57 is obtained,

(4) cooling the mixture to 160° C. and adding ethyl benzene 517 parts, cooling to 82° F. and adding methyl ethyl ketone 339 parts, and cooling to 65° C.,

(b) adding thereto toluene diisocyanate 730 parts over a two-hour period, maintaining the temperature at 82° C. or below *adding thereto additional toluene diisocyanate 50 parts*, then heating to 100°–105° C. for about 1.5 hours, and then diluting with inert solvent.

PLANT PATENTS

GRANTED MAY 12, 1981

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,711

ROSE PLANT

Ernest Schwartz, deceased, late of Kingsville, Md. (by Hazel E. Schwartz, executrix), assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed Apr. 21, 1980, Ser. No. 142,412
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as shown and described, characterized particularly by pale pink and near white blooms with yellow tones at petal point of attachment, excellent bud and flower form and excellent substance.

4,712

ROSE PLANT

O. L. Weeks, 4759 Philadelphia St., Chino, Calif. 91710

Filed Apr. 21, 1980, Ser. No. 142,405
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as shown and described, characterized particularly by peach colored flowers of heavy petalage borne primarily singly to a stem and a vigorous plant with abundant attractive dark green foliage.

4,713

ROSE PLANT

O. L. Weeks, 4759 Philadelphia St., Chino, Calif. 91710

Filed Apr. 14, 1980, Ser. No. 139,837
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—26 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class, substantially as shown and described, characterized particularly by clusters of soft pink colored flowers which lighten upon aging beginning with buds showing yellow coloring at petal point of attachment and pink at petal edge and opening to soft pink blooms showing golden yellow centers in freshly open flowers.

4,714

ROSE PLANT

O. L. Weeks, 4759 Philadelphia St., Chino, Calif. 91710

Filed Apr. 14, 1980, Ser. No. 140,117
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—27 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class, substantially as shown and described, characterized particularly by high centered flowers of Spinel red and yellow, borne primarily in small clusters but also singly to a stem and which retain the unusual dual coloring upon aging, but lightening to Neyron red and pale yellow.

4,715

ORCHID PLANT: GOLDEN KING

Shuh-Lih Guo, 21, Lane 626, Lin-Shen Rd., Hu-Wei Chen, Yun-Lin Hsien, Taiwan

Filed Oct. 4, 1979, Ser. No. 81,642
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinctive variety of orchid hybrid plant of the genus Phalaenopsis substantially as herein described and illustrated, characterized particularly by its matchless and distinguished yellow flowers which are unusually large, profuse, and long-lasting when compared with other flowers of this genus.

4,716

CHRYSANTHEMUM PLANT

Jack M. Meek, and William E. Duffett, both of Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Jan. 11, 1980, Ser. No. 111,379
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium,* Ramat., plant known by the cultivar name Heirloom and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; daisy capitulum type; white ray floret color; diameter across face of capitulum ranging from 85 to 95 mm. at maturity; uniform nine week photoperiodic flowering response to short days; medium peduncle length; medium plant height when grown as a single stem cut spray; and semi-upright branching pattern.

PATENTS

GRANTED MAY 12, 1981

ERRATA

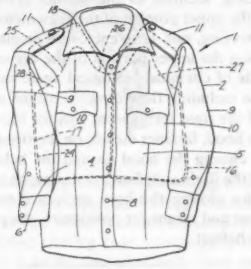
For CLASS	See PATENT NO.
474–227	4,266,435
493–219	4,266,469
081–001 R	4,266,587
411–307	4,266,590
411–167	4,266,591
294–163	4,266,705
369–041	4,266,783
369–077	4,266,784
369–216	4,266,785
260–040 R	4,267,310

PATENTS

GRANTED MAY 12, 1981

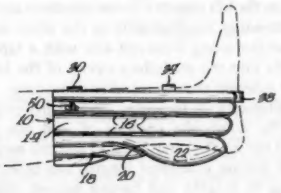
GENERAL AND MECHANICAL

4,266,297
BULLET RESISTANT BALLISTIC PANEL CARRIER GARMENT
John H. Atkins, Cincinnati, Ohio, assignor to A & B Industries, Inc., Cincinnati, Ohio
Filed Jun. 12, 1979, Ser. No. 47,896
Int. Cl.[3] F41H *1/02*
U.S. Cl. 2—2.5 **9 Claims**



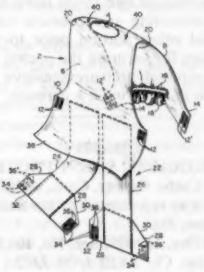
1. A bullet resistant ballistic panel carrier garment comprising a shirt-like carrier garment having a back portion and a front portion, wherein said front portion includes left and right closable chest sections and means for closing said sections, a rear pocket-like ballistic panel receiving receptacle, means attaching said rear receptacle to the inner surface of said back portion, whereby at least the lower portion of said rear receptacle swings freely from said back portion and forms an air space between said rear receptacle and the adjacent inner surface of said back portion, and a front pocket-like ballistic panel receiving receptacle, said front receptacle comprising left and right ballistic panel receiving receptacles, means attaching said front left and right receptacles to the inner surfaces of said left and right chest sections, respectively, whereby at least the lower portions of said left and right receptacles swing freely from said left and right chest sections and form an air space between said left and right receptacles and the corresponding inner surfaces of said left and right chest section, said left and right receptacles including a vertically positioned opening along one edge thereof such that said openings are in substantially aligned facing relationship with each other when said garment is being worn.

4,266,298
INFLATABLE HEEL PROTECTOR
Joseph L. Graziano, Oak Park, Ill., assignor to Marlene S. Mindey, Chicago, Ill.
Filed Jan. 31, 1980, Ser. No. 117,373
Int. Cl.[3] A41D *13/06*
U.S. Cl. 2—22 **14 Claims**



1. A heel protector for cushioning a foot comprising:
a first wall adapted to contact a foot;
a second wall joined with said first wall generally along its respective peripheral edge to form a bag, said first and second walls being adapted to distribute the forces exerted on the second wall over a larger area of the first wall and said second wall being separated from said first wall by a cushion of fluid along most of its interior surface, means joining portions of the interior of the first wall to corresponding portions of the interior of the second wall to form interconnecting pillow segments, so that fluid in any pillow segment can communicate with fluid in other pillow segments, to further aid in the distribution of forces exerted on the second wall over a wider area on the first wall; and
means to fasten said protector in a generally U-shaped arrangement where it can function to protect that which it surrounds against damage.

4,266,299
PROTECTIVE GARMENT
Geraldine F. Beal, 55 Tillotson Rd., Needham, Mass. 02192
Filed Jul. 27, 1979, Ser. No. 61,492
Int. Cl.[3] A41D *27/12*
U.S. Cl. 2—46 **3 Claims**



1. A protective garment comprising an upper portion, said upper portion having an opening therein adapted to fit about the neck of a wearer, said upper portion comprising a front panel adapted to extend generally coextensive with the chest of said wearer, front panel tab portions extending from each side of said front panel and adapted to overlie the sides of said wearer, a back panel adapted to extend generally coextensive with the back of said wearer, and back panel tab portions extending from each side of said back panel and adapted to overlie said sides of said wearer, said front and back panel tab portions having first connecting means disposed at the waist of said wearer for releasable interconnection of said front and back panels, an apron depending from said front panel and said front panel tab portions throughout the length of said front panel tab portions, and a lower portion connected to an undersurface of said front panel, said front panel and said apron overlying said lower portion, said lower portion comprising first and second leg extensions, each of said extensions being generally rectangularly-shaped and having at its end remote from said upper portion flap means adapted to encircle a leg portion of said wearer, and second connecting means disposed on said flap means, whereby said extensions may be fastened about the leg portions of said wearer.

4,266,300
ATTACHABLE AND DETACHABLE POCKET FOR A GARMENT

Aileen A. Partridge, 2018 W. Superior St., Apt. 4, Duluth, Minn. 55806

Filed Jul. 30, 1979, Ser. No. 61,948
Int. Cl.[3] A41D *27/20*
U.S. Cl. 2—247 2 Claims

1. An attachable and detachable pocket for a garmet comprising:
(a) a back portion,
(b) a front portion secured to said back portion along the sides and bottom and open at one end to form a pocket,
(c) a single panel having a pressure sensitive adhesive surface on the rear thereof for the sole connection with a garment, a portion thereof adhesively connected to the upper front portion of said back portion with the outer portion thereof extended beyond said back portion,
(d) said other portion of said single panel having
(e) means for protecting said pressure sensitive adhesive surface of said other portion prior to exposure of the adhesive surface for securing the pocket to a garment by pressing the exposed pressure sensitive area of the extended portion directly upon a garment.

4,266,301
CHEMICAL-BIOLOGICAL AGENT PROTECTIVE HOOD

William R. Canda, Custer County, Colo., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

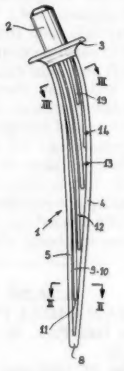
Filed Dec. 5, 1979, Ser. No. 100,578
Int. Cl.[3] A42B *3/00, 3/02*
U.S. Cl. 2—410 6 Claims

1. A protective hood for the protection of a flight crewmember from chemical-biological agent with the hood being positioned over a conventional flight helmet having a conventional visor assembly and oxygen mask attached and with an oxygen hose connected between the oxygen mask and a conventional chemical-biological agent filter with the hood having a portion partially covering the upper portion of the crewmember flight suit assembly, comprising: a helmet covering member; a hose enclosure member secured to said helmet covering member; a rigid transparent lens sealed to said helmet covering member and being adapted to fit over the visor assembly on said helmet and being spaced from said visor assembly and said oxygen mask; means, secured to the helmet covering member for covering the upper portion of the crewmember flight suit; said helmet covering, said hose enclosure member and said means for covering the upper portion of the crewmember flight suit being made of chemical-biological agent nonpermeable material; means including flow director means secured to the rear portion of the rigid transparent lens for blowing air inside the protective hood; fastener means, on the front of said protective hood, for closing the hood around the helmet and the upper portion of the flight suit; fastener means, on said hose enclosure member, for closing the hose enclosure member around the oxygen hose and means for positioning the protective hood on said flight helmet.

4,266,302
FEMORAL PIN FOR HIP PROSTHESIS

Alain Tornier, Le Brocey-Crolles, France, assignor to Etablissements Tornier, St. Ismier, France

Filed Oct. 2, 1979, Ser. No. 81,228
Claims priority, application France, Oct. 11, 1978, 78 29594
Int. Cl.[3] A61F *1/03*
U.S. Cl. 3—1.912 4 Claims



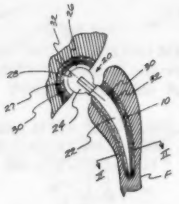
1. In a hip prosthesis of the type having a hilt member for engaging the end of a femur and having a pivot member extending from the hilt member in one direction and having a pin member extending longitudinally in the other direction from the hilt member along a curved axis with a tapered contour shaped to fit into the medullary cavity of the femur, the improvement wherein the pin member comprises:
(a) a multiplicity of funicular strands grouped together to form the composite contour of said pin member, the strands having first ends fixed to said hilt member, and the strands having graduated lengths and being grouped according to lengths and having second ends connected together; and
(b) the longest strands forming the outer contour of the pin member, and the shorter strands having their second ends terminating at multiple points inside the pin member, which points are located progressively closer to the hilt member within said tapered contour.

4,266,303

METHOD OF ORTHOPEDIC IMPLANTATION AND IMPLANT PRODUCT

Joon B. Park, Clemson, S.C., assignor to Clemson University, Clemson, S.C.

Filed Sep. 24, 1979, Ser. No. 78,225
Int. Cl.³ A61F *1/24, 1/20*
U.S. Cl. 3—1.91 **21 Claims**



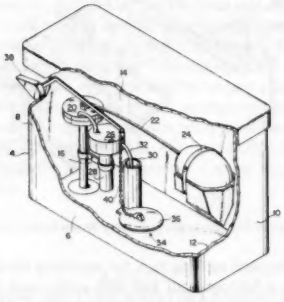
1. An orthopedic implant prosthesis comprising a base material structurally defined as to shape and strength to assimilate a portion of hard tissue of a warm blooded mammal, said prosthesis having a polymer coating over substantially the entire surface of same that is to be contacted with bone cement to secure the prosthesis within the hard tissue, said polymer coating having been substantially completely polymerized under appropriate temperature and pressure conditions to achieve a substantially pore free outer surface, said polymer being compatible with a bone cement to be used during surgical implantation of the prosthesis to achieve an adequate adhesive bond therebetween.

4,266,304

FLUSH TANK WATER SAVER

Edward L. Kohrn, 9 Sunset Dr., Cape Arthur, Severna Park, Md. 21146, and Seymour Globus, 268 Wakely Ter., Bel Air, Md. 21024

Filed May 24, 1979, Ser. No. 42,218
Int. Cl.³ E03D *1/00*; A47K *17/00*
U.S. Cl. 4—415 **4 Claims**



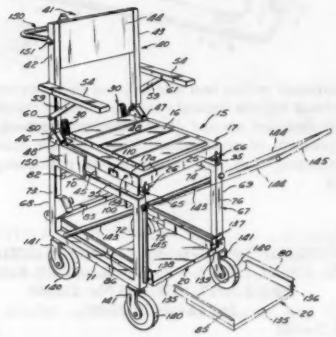
1. In a flush toilet including a water tank in which the water level is held at a predetermined level by a float valve controlled by a ball float and a bouyant water-saving device attached to said ball float, the improvement wherein said bouyant water-saving device comprises a bouyant unitary member comprised of a tapered portion having a plurality of sides and a side portion integral with and projecting laterally from one of said sides of said tapered portion, said tapered portion and said portion jointly having a concave section for receipt of said ball float, the length of said concave section being over half but less than the entire length of said ball float, said tapered portion containing a lowermost wedge section, means for attaching said device to said ball float, and means extending peripherally around said side portion for receipt of said attaching means.

4,266,305

WHEELCHAIR FOR TRANSPORTATION VEHICLES

Peter P. Kavaloski, Los Angeles, and Thomas K. Hale, Glendale, both of Calif., assignors to Lockheed Corporation, Burbank, Calif.

Filed Nov. 14, 1979, Ser. No. 94,397
Int. Cl.³ A47K *11/06*
U.S. Cl. 4—480 **20 Claims**



1. A wheelchair for transporting a disabled person into position over a toilet opening in the shroud of a bench type toilet comprising:

a frame mounted on wheels;

a seat stabilizer mounted on said frame by first slide means for movement of said seat stabilizer outwardly of said frame to an outward position;

a translating seat assembly mounted on said frame by second slide means for movement of said seat assembly outwardly of said frame to an outward position and located above said seat stabilizer;

a cut out in said seat stabilizer and an opening in said seat assembly, both located over said toilet opening when said seat stabilizer and then said seat assembly are moved to said outward positions; and

said seat stabilizer having means at the end thereof for engaging said shroud on opposite sides of said toilet opening after said seat stabilizer has been moved to its outward position to prevent tipping of said frame upon movement of said seat assembly to its outward position.

4,266,306

BATH SEAT FOR BABIES

Seung B. Lee, 258-16 Sooyoo-dong, Dobong-ku, Seoul, Rep. of Korea

Filed Jun. 8, 1979, Ser. No. 46,949
Claims priority, application Rep. of Korea, Aug. 13, 1978, 4840/1978
Int. Cl.³ A47K *3/024, 3/164*; A47C *3/20*
U.S. Cl. 4—572 **7 Claims**

1. A bath seat for babies comprising:

a seat including at least one hole formed on a central part of a curved upper surface thereof and groove portions formed at a central portion of opposite sides of said seat;

a first and second lever member disposed within said groove portions and each including lower end portions;

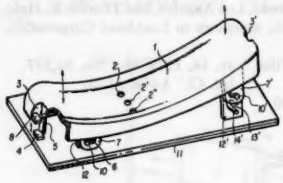
a base member disposed beneath said seat;

a plurality of vertically extending supporting plates connected to said base and including first idle-holes formed therein;

a plurality of elongated support legs connected to said seat,

downwardly extending therefrom, and having second idle-holes formed therein, said lever members being pivotably mounted on said support legs; and

first and second supporting rods connected to said lower end portions of said first and second lever members, adjustably



positioned within said idle-holes of said supporting plate and said support leg and connected to said end portions of said first and second lever members, respectively, for adjustment of positioning within said idle-holes of said supporting rods and corresponding positioning of said seat.

4,266,307

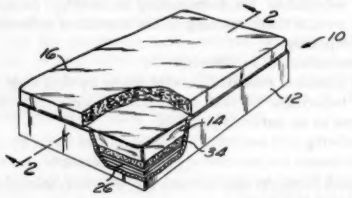
WATERBED FOUNDATION CONSTRUCTION

Frank W. Critelli, 22882 Leo La., El Toro, Calif. 92630

Filed Feb. 17, 1978, Ser. No. 878,691

Int. Cl.[2] A47C *27/08*

U.S. Cl. 5—451 **6 Claims**



1. In a waterbed construction:

a frame, said frame including vertically disposed side members and end members joined together to form a substantially rectangular shape, said side members and said end members having an upper edge and a lower edge;

a lateral support platform adapted to be disposed within said side members and said end members and being affixed to said side members and said end members;

a water bladder having a top surface and a bottom surface, said water bladder being comprised of a flexable waterproof material, said water bladder being disposed entirely within said frame and upon said support, said water bladder being adapted to be filled with water to a level so that, the top surface thereof reaches a level substantially to the upper edge of said side member and said end member; and

an upper mattress having dimensions so that said mattress rests upon said water bladder.

4,266,308

BED COVERING

Mark F. Shatz, 1204 Short St., Union City, Tenn. 38261

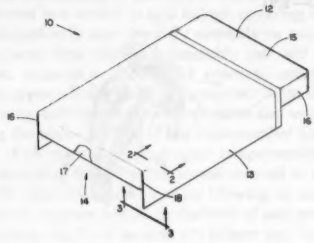
Filed Nov. 5, 1979, Ser. No. 91,090

Int. Cl.[3] A47G *9/00*; A47C *23/00*

U.S. Cl. 5—494 **10 Claims**

1. An improved bed covering which comprises:

a first sheet defining a pocket adapted for fitting upon an end of a mattress, said first sheet including a top portion to overlie the mattress, said first sheet further including side portions and an end portion depending from corresponding sides and an end of the top portion, respectively, the side portions being attached to the end portions at corner locations corresponding to the end corners of the mattress, the side and end portions including extensions adapted to underlie the mattress, the pocket being defined by the top, side and end portions and the extensions of the side and end portions; and



a second sheet secured to said first sheet adjacent the corner locations, said second sheet being unsecured to said first sheet along the side portions of said first sheet, whereby installing said first sheet to the end of a mattress secures said second sheet to the mattress.

4,266,309

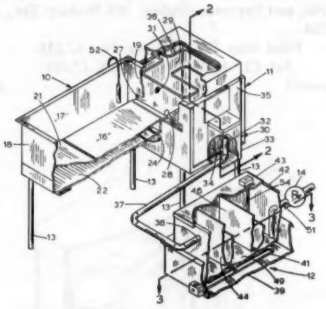
METHOD AND APPARATUS FOR SEPARATING HONEY FROM HONEYCOMBS

Glen L. Stanley, Des Moines, Iowa, assignor to The Jefferson Industries Company, Fairfield, Iowa

Filed Feb. 27, 1980, Ser. No. 125,180

Int. Cl.[3] A01K *59/00*

U.S. Cl. 6—12 R **6 Claims**



1. Apparatus for separating honey from honeycombs including:

(a) an elongated melting tank for receiving the honeycombs having a bottom wall and end walls, said honeycombs being supplied to the tank adjacent one end thereof,

(b) means for heating the bottom wall of the melting tank to a wax melting temperature to provide for the flow of a honey and melted wax mixture from said one end to the opposite end thereof,

(c) an upright settling tank at said opposite end of the melting tank for receiving said mixture, with the honey in the mixture settling toward the bottom of the settling tank and the melted wax in said mixture accumulating adjacent the upper end thereof,

(d) a wax drain for removing the melted wax from the settling tank,

(e) a honey clarifying unit having an inlet portion and an outlet portion,

(f) a honey drain on the settling tank located below the level of said melted wax drain for draining the honey therefrom to said inlet portion, and

(g) means for withdrawing the honey from said outlet portion.

4,266,310

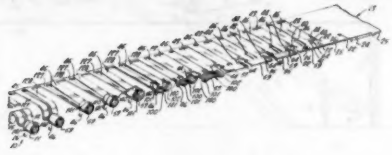
ARRANGEMENT FOR FORMING METAL PARTS

Frederick Perrault, 2644 W. 225th St., Torrance, Calif. 90505, and Raymond E. Perrault, 2404 Colt Rd., Rancho Palos Verdes, Calif. 90274

Continuation-in-part of Ser. No. 842,605, Oct. 17, 1977, abandoned. This application Oct. 31, 1978, Ser. No. 956,427

Int. Cl.³ B21D *53/24*

U.S. Cl. 10—86 R **139 Claims**



1. The method of forming a part having a screw thread having flanks at a predetermined angle comprising the steps of engaging one side of a workpiece with means having ridges thereon so as to provide a plurality of substantially parallel grooves in said one side of said workpiece extending from adjacent a first edge of said workpiece to adjacent a second edge of said workpiece opposite from said first edge,

said engagement first being by at least one member in which said ridges have at least some sidewalls which are more steeply inclined than the flanks of said screw thread so as to produce grooves in said one side of said workpiece having correspondingly inclined sidewalls, and then by another member having ridges thereon having sidewalls which are more shallowly inclined than are said sidewalls of said ridges of said one member and which conform substantially to the angle of the flanks of said screw thread so as to cause said grooves to have sidewalls corresponding in inclination to the flanks of said screw thread, and then bringing said first and second edges into proximate relationship relative to each other to impart a substantially cylindrical configuration to said workpiece with the ends of adjacent ones of said grooves being positioned substantially in alignment with each other at said first and second edges to define a helix and produce a screw thread on said workpiece.

4,266,311

MACHINE FOR REEVING AND/OR LASTING SHOES IN THE HEEL AND ANKLE PART

Gerhard Winter, Hauenstein, Fed. Rep. of Germany, assignor to Schon & Cie GmbH Maschinenfabrik, Pirmasens, Fed. Rep. of Germany

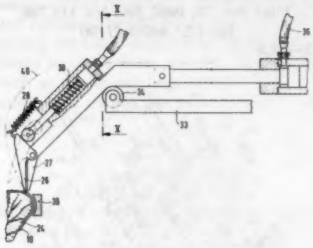
Filed Jun. 15, 1979, Ser. No. 49,188

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1978, 2826740

Int. Cl.³ A43D *21/00, 23/00*

U.S. Cl. 12—10.1 **5 Claims**

1. A shoe lasting machine comprising a receiving device for a last, a heel band for holding a shoe upper on the last, a first wiper for shearing a heel portion of the shoe upper, a second wiper for wiping a side portion of the shoe upper, a pincer disposed between said first and second wiper for gripping an edge portion of the upper, and means for moving said pincer over the last in a direction outwardly away from the last so that a pull directed outwardly away from the last is exerted on the edge portion to avoid forming a pocket in the upper.



4,266,312

APPARATUS FOR USE IN LAMINATING A WORKPIECE

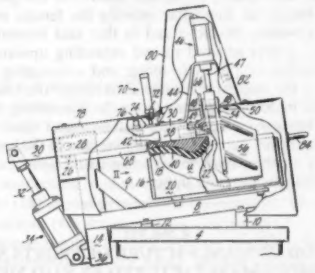
Dennis S. Hall, Leicester, England, assignor to USM Corporation, Farmington, Conn.

Filed Jun. 28, 1979, Ser. No. 53,098

Claims priority, application United Kingdom, Aug. 19, 1978, 33950/78

Int. Cl.³ A43D *11/00, 95/00*

U.S. Cl. 12—52 **7 Claims**



1. Apparatus for laminating a workpiece including at least a portion of a shoe upper and a lining through the use of an interposed layer of adhesive, said apparatus comprising:

a form for positioning the workpiece, said form having an upper surface which has portions of different radius of curvature along its length and two opposite side surfaces, each of which is generally planar and inclined to the vertical so that the form tapers upwardly;

means to heat the workpiece;

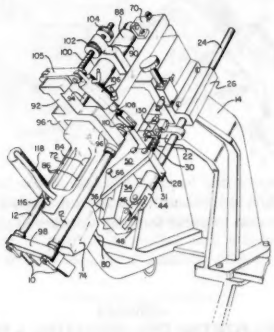
pressing means operable to press the workpiece positioned on the form, said pressing means including a first presser member having a surface generally complementary to the upper surface of the form, and two generally planar second presser members, one associated with each of the side surfaces of the form;

first moving means operable to move the first presser member into an operative position in which it presses the central portion of the workpiece against the upper surface of the form, and second moving means operable with the second presser members, arranged to index after operation of the first moving means to move the second presser members so that they press the edge portions of the workpiece disposed on the form against the opposite side surfaces of the form.

4,266,313
BOOT UPPER QUARTER MOLDING MACHINE

Walter Vornberger, Tewksbury, MA, assignor to International Shoe Machine Corporation, Nashua, N.H.

Filed Jan. 23, 1980, Ser. No. 114,766
Int. Cl.³ A43D *11/00*
U.S. Cl. 12—54.3 **4 Claims**

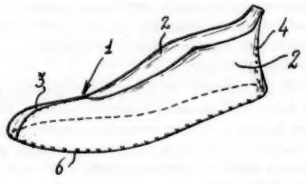


1. A boot upper quarter molding machine comprising: a frame; a male mold; mounting means mounting the male mold bottom-up; a female mold so mounted to the frame as to be movable between an idle position wherein the female mold is spaced from the male mold and a working position wherein the female mold presses a quarter mounted on the male mold against the rearmost end and the sides of the male mold; means for initially maintaining the female mold in its idle position; and actuable means for thereafter moving the female mold to its working position; characterized in that said mounting means comprises: a stem secured to and extending upwardly of the bottom surface of the male mold; and connecting means so connecting the stem to the frame as to render the rearmost end of the male mold visible from above the connecting means; the machine being so constructed and arranged that the space beneath the downwardly facing top surface of the male mold is free of any machine parts for a distance sufficient to accommodate the shaft of the boot upper.

4,266,314
METHOD OF MANUFACTURE OF SPORTS SHOES, AND SHOES MANUFACTURED BY SAID METHOD

Rosette Londner epouse Ours, 62, Avenue Clarisse, F-92420 Vaucresson, France

Filed Sep. 7, 1979, Ser. No. 73,543
Int. Cl.³ A43D *9/00*; A43C *13/08*
U.S. Cl. 12—142 P **4 Claims**

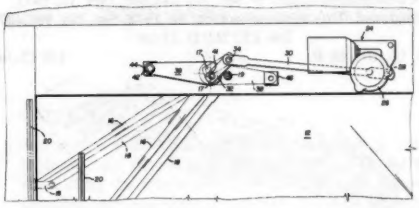


1. A method of manufacture of a sports shoe, such as a football boot, comprising the steps of forming a lining fabricated from a slipper of leather or other suitable material having an upper and a sole; overmolding of a first layer of plastic material to cover the entire upper and the sole of said slipper to obtain an assembly; overmolding on said assembly of a second layer of a stiffening reinforcement of plastic material having greater rigidity than that of said first layer, said second layer overlapping said first layer and constituting only a shell which surrounds the rear counter of the upper and a thin intermediate sole which covers the sole of the slipper; and applying and fixing an outer wearing sole of molded plastic material to the outer surface of said thin intermediate sole.

4,266,315
WINDOW WIPER STORAGE SYSTEM

Richard J. Skahill, Bettendorf, Iowa, assignor to J.I. Case Company, Racine, Wis.

Filed Nov. 9, 1979, Ser. No. 92,824
Int. Cl.³ B60S *1/24*
U.S. Cl. 15—250.16 **3 Claims**



3. In a windshield wiper drive mechanism for use in an enclosure having at least one movable windshield panel, said windshield wiper drive mechanism including a motor and drive means mounted to said motor, a wiper blade assembly including a wiper blade and a drive shaft, said drive means being connected to said drive shaft for rotating said drive shaft a set amount both clockwise and counter-clockwise thereby causing said wiper blade to sweep laterally within a predetermined wiping area on said windshield panel during normal wiping operation, the improvement comprising:

said drive shaft being mounted eccentrically at a first position within a hub and sleeve assembly for normal wiping operation;

actuator means being mounted to said hub for selectively rotating said hub and drive shaft such that said drive shaft assumes a second eccentric position, said drive means causing said drive shaft to rotate more than said set amount when said actuator means is rotated whereby said wiper blade is swung laterally onto said frame and out of contact with said windshield panel.

4,266,316
SUCTION TUBE ASSEMBLY FOR RING FURNACE

Paul A. Schneider, Oslo, and Carlo Eliassen, Ardalstangen, both of Norway, assignors to Ardal Og Sunndal Verk A.S., Oslo, Norway

Filed Sep. 21, 1979, Ser. No. 77,761
Int. Cl.³ A47L *5/14*
U.S. Cl. 15—304 **3 Claims**

1. A suction tube unit for use in a ring furnace for producing carbon bodies used in the metallurgical industries, such furnace being of the type including at least one baking chamber substantially filled with carbon bodies to be baked, with narrow vertical spaces between the carbon bodies and the chamber walls, such vertical spaces being filled with small pieces of packing coke during operation of the furnace, said suction tube unit being employed for removing the packing coke from the vertical spaces during unloading of the furnace, said suction tube unit comprising:

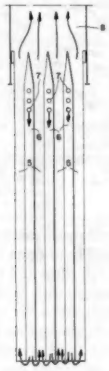
a plurality of elongated suction tubes and a plurality of elongated air-supply tubes, said tubes being arranged to extend parallel to each other and being aligned in a single straight row, with each adjacent pair of said suction tubes being separated by a separate one of said air-supply tubes, thereby forming an elongated and thin assembly of dimen-

sions sufficient to be vertically extended into and to fit within a furnace vertical space filled with packing coke;

telescopic mounting means supporting said assembly at an upper portion thereof for vertically and horizontally guiding said assembly within a furnace vertical space and into packing coke therein;

said suction tubes and said air-supply tubes having substantially downwardly facing open lower ends;

suction means, connected to upper ends of said suction tubes, for creating a vacuum within said suction tubes and



for thereby withdrawing the packing coke from the furnace vertical space upwardly through said suction tubes; and

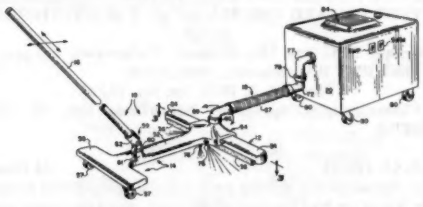
upper portions of said air-supply tubes having therein orifice means opening into the surrounding ambient atmosphere for, upon the creation of said vacuum within said suction tubes and in response to said vacuum, causing ambient air to enter said air-supply tubes and flow downwardly therethrough and for thereby facilitating the withdrawal upwardly through said suction tubes of the packing coke.

4,266,317

VACUUM CLEANING APPARATUS

John Duda, 6313 N. Wayne Ave., Chicago, Ill. 60660

Filed May 18, 1979, Ser. No. 40,091
Int. Cl.³ A47L *7/00*
U.S. Cl. 15—322 **12 Claims**



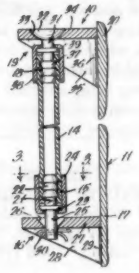
1. In a floor cleaning and sanitizing apparatus of the character described, in combination a cleaning unit comprising an elongated transversely extending inverted cup-shaped suction head designed for direct support on, and universal multidirectional sliding movement over a floor surface to be cleaned and including a transversely elongated top wall, depending end walls, and front and rear spaced apart depending flexible floor-engaging members establishing an internal downwardly opening suction chamber, said suction head having means whereby said chamber may be connected to a source of sub-atmospheric pressure, a guide carriage for said suction head in the form of a generally T-shaped member including a longitudinally extending beam connected at its forward end to a medial region of the suction head and extending rearwardly therefrom and having a transversely extending T-head at its rear end, thus rendering the cleaning unit generally of H-shape configuration, caster means tractionally supporting the T-head from the floor, an elongated operating handle for said unit, and a universal joint connecting the lower end of said handle to said beam in close proximity to said T-head, whereby components of rearward, as well as side-to-side, movements of the handle will effect commensurate trailing sliding movements of the suction head on the floor.

4,266,318

HAND RAIL ASSEMBLY

Fred R. Dauwalder, Yorkville, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 29, 1979, Ser. No. 83,991
Int. Cl.³ B60N *3/02;* **B60R** *27/00*
U.S. Cl. 16—111 R **11 Claims**



1. A hand rail assembly (**10**) comprising:

graspable means (**14**);

first breakable connecting means (**16**) associated with a first portion (**15**) of said graspable means for releasably securing said first portion to a support (**11**); and

second connecting means (**19**) associated with a second portion (**18**) of said graspable means (**14**) spaced from said first portion (**15**) for providing a maintained securing of said second portion of the graspable means to the support notwithstanding a force being applied to said assembly sufficient to break said first connecting means (**16**), each of said first and second connecting means (**16,19**) comprising brackets (**28,35**) carried by the support (**11**), a mounting element (**21**) fixedly connected to the graspable means (**14**), first, breakable means (**30**) securing the mounting (**21**) of the first connecting means to the bracket (**28**) thereof, and second, unbreakable means (**32**) securing the mounting element (**31**) of the second connecting means (**19**) to the bracket (**35**) thereof.

4,266,319

APPARATUS FOR FACILITATING ATTACHMENT OF A BAG TO A LAWNMOWER

David R. Mason, 4162 Dearborn St., East Chicago, Ind. 46312

Filed Nov. 13, 1979, Ser. No. 93,860
Int. Cl.³ A01D *53/00;* **A47B** *95/02*
U.S. Cl. 16—111 A **8 Claims**

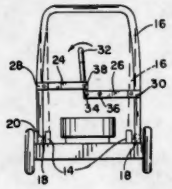
1. An adaptor kit for use in a lawnmower, the lawnmower having a frame, a pair of brackets secured to the frame, and a pair of handlebars releasably attachable to said pair of brackets in a first position, and detachable from said pair of brackets in a second position,

comprising in combination:

first and second attachment means releasably securable to said handlebars, respectively, including first and second clamps securable to said handlebars, respectively, and first

and second bars extending inwardly from said first and second clamps, respectively, so as to substantially overlap one another, and

shifting means securable to said attachment means for shifting said handlebars between said first and second positions, including a lever connected to said bars and normally occupying an initial position, when said handlebars occupy said first position, said lever being shiftable to an operative position for moving said handlebars to said second position, whereby a bag is easily attachable to said frame when said handlebars are in said second position, and upon said bag being attached to said frame, said handlebars may be returned to said first position.



4,266,320

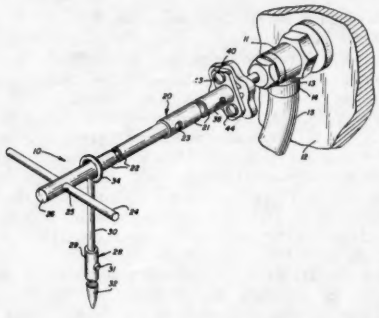
FAUCET EXTENDER

Cary E. Grant, 1077 Coventry Dr., Lake Forest, Ill. 60045

Filed Sep. 27, 1979, Ser. No. 79,442

Int. Cl.³ E05B *1/00*

U.S. Cl. 16—114 R **7 Claims**



1. A device for use with a faucet on the outside of a house and having an externally threaded outlet portion for attachment to a fitting at the end of a garden hose and a valve controlled by an outwardly projecting generally horizontal rotatable shaft, said device comprising: an elongated extension member for extending generally horizontally in axial alignment with said shaft from an inner end adjacent the faucet to an outer end spaced a substantial distance therefrom, handle means on the outer end of said extension member for engagement by the hand of a user to effect rotation of said extension member, connection means secured to said inner end of said extension member and arranged for connection to said shaft to effect rotation of said shaft upon rotation of said extension member, an elongated support member arranged to extend vertically from a lower end adapted to be driven into the ground to an upper end adjacent said outer end of said extension member, and journaling means on said upper end of said support member for supporting and journaling said outer end of said extension member.

4,266,321

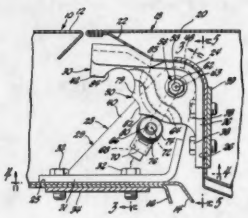
HINGE AND HOLD-OPEN ASSEMBLY

Paul F. Pelchat, Canton, and Alfonsas Arlauskas, Troy, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 20, 1979, Ser. No. 50,186

Int. Cl.³ E05D *11/10*

U.S. Cl. 16—145 **3 Claims**



1. A hinge and hold-open assembly comprising a pair of hinge straps, an integral hold-open spring and pivot pin member having a pivot pin portion and a spring portion, means on said hinge straps for cooperating with said pin portion to pivotally connect said hinge straps for relative pivotal movement between a closed condition and an open condition, means on one of said hinge straps for preventing turning of said spring and pin member relative to said one hinge strap while permitting radial deflection of said spring portion relative to said pin portion, a rotary cam follower rotatably mounted on said spring portion, and cam means on the other of said hinge straps for guiding said cam follower, said cam means including a first lobe portion for establishing said spring portion in a relaxed condition when said hinge straps are in their closed condition and forcing gradual radial deflection of said spring portion in one direction during relative pivotal movement of said hinge straps to their open condition, said cam means further including a second lobe portion with a convex profile for guiding said cam follower to permit relatively abrupt but limited radial unflexure of said spring portion in the opposite direction upon the hinge straps assuming their open condition to thereby yieldingly hold the hinge straps in their open condition and whereby less effort is required to establish the hold-open condition then is required to release same.

4,266,322

DEVICE FOR MAKING A CUT EXTENDING FROM THE VENT TOWARD THE BREAST IN A SLAUGHTERED BIRD

Martinus P. G. van Mil, Boxmeer, Netherlands, assignor to Stork PMT B.V., Boxmeer, Netherlands

Filed Feb. 8, 1979, Ser. No. 10,233

Claims priority, application Netherlands, Feb. 15, 1978, 7801712

Int. Cl.³ A22C *21/00*

U.S. Cl. 17—11 **26 Claims**

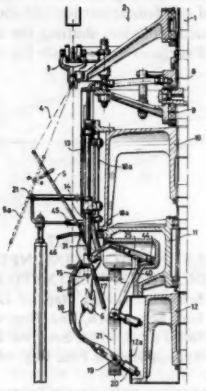
1. Apparatus for making a cut in a slaughtered bird to open the skin of the bird forward of the vent toward the breast point of the bird and in which the bird is being conveyed on conveyor means along a path relative to a generally fixed support, the support and apparatus having cooperating drive structure including driving and driven means for operating said apparatus along a particular cutting locus of said support as the bird passes said locus, there being means for positioning the bird with its vent-to-neck axis generally vertical at least while at said cutting locus and said apparatus comprising:

A. a rotary knife, means carrying said rotary knife and moving in synchronism with said conveyor means, said rotary knife being rotatable about a substantially vertical axis, said rotary knife adapted to be reciprocated on said axis while rotating to cut a circular opening at said vent and

thereafter retract as said rotary knife carrying means and bird pass through said cutting locus;

B. a generally straight edge second knife, mounting means for said second knife and a swinging arm having said mounting means coupled thereto, a framework moving in synchronism with said conveyor means and rotary knife carrying means, said framework having said arm pivotally connected thereto;

C. the driving and driven means being effective while said



bird, rotary knife carrying means and framework pass said cutting locus to swing said arm in a plane which is generally parallel with if not defined by said axis while transporting the second knife into the circular opening after the rotary knife has retracted away from said opening, along a tortuous path in the bird's skin a distance toward the breast point spaced from said vent and then in a reverse direction substantially along the same path;

D. said mounting means for said second knife and framework having means cooperating to define said path.

4,266,323

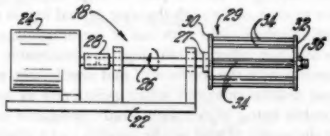
APPARATUS FOR CHOPPING STRANDS

John A. Waugh, Aiken, S.C., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Aug. 10, 1979, Ser. No. 65,689

Int. Cl.³ D01G *1/04*

U.S. Cl. 19—0.56 **3 Claims**



1. Apparatus for collecting undesirably long sections of strand from advancing discrete segments of strand comprising:

means for forming said discrete segments of strand from an input strand said segments moving along a path;

rotatably driven spaced apart rods oriented substantially parallel to the axis of rotation thereof, the axis of rotation being oriented substantially transverse to the path of the advancing discrete segments to collect said undesirably long sections of strand on said rods while permitting said discrete segments to pass therethrough.

4,266,324

SILVER WEIGHT UNEVENNESS CORRECTING APPARATUS

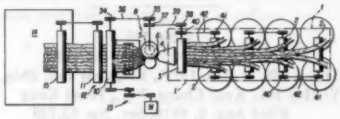
Junzo Hasegawa, Obu; Susumu Kawabata, Aichi; Hiroshi Niimi; Yasuhiko Suzuki, both of Nagoya; Masaki Akatsuka, Kariya, and Takahiko Tsunekawa, Aichi, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoya and Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, both of, Japan

Filed Dec. 27, 1979, Ser. No. 107,571

Claims priority, application Japan, Dec. 27, 1978, 53-163856; Jan. 24, 1979, 54-7966; Feb. 9, 1979, 54-14605; Feb. 15, 1979, 54-16905

Int. Cl.³ D01H *5/38*

U.S. Cl. 19—239 **30 Claims**



1. Sliver weight unevenness correcting apparatus comprising:

a sliver weight measuring section having a sliver weight detecting sensor for detecting the variations in weight of a bundle of slivers;

a correcting draft device having front rollers disposed downstream of said sliver weight measuring section relative to the direction of advancement of slivers, said front rollers being rotated at a constant speed, and back rollers disposed between said sliver weight measuring section and said front rollers, said back rollers being rotated at a variable speed;

rotation detecting means for detecting the number (N_F) of revolutions of said front rollers;

an unevenness correcting circuit having a ratio circuit for operating a ratio (E_0/E_1) between a reference weight (E_0) of the bundle of slivers and a detected weight (E_1) thereof, and

a contrasting operational circuit for multiplying said operational ratio (E_0/E_1) from said ratio circuit and a ratio (N_F/k) between the number (N_F) of revolutions of said front rollers from said rotation detecting means and a reference draft value (k), and for producing a multiplied signal ($E_0/E_1 \cdot N_F k$); and

a speed control circuit for producing a speed control signal responsive to the multiplied signal ($E_0/E_1 \cdot N_F/k$) from said contrasting operational circuit, said speed control circuit connected with the back rollers via a rotation transmitting mechanism, thereby controlling the speed of rotation of said back rollers through the rotation transmitting mechanism.

4,266,325

SAFETY BELT FOR VEHICLES

Leif Ennerdal, Alingsas, and Lars E. Berg, Vargarda, both of Sweden, assignors to Autoliv AB, Vargarda, Sweden

Continuation of Ser. No. 815,268, Jul. 13, 1977, abandoned. This application Mar. 28, 1979, Ser. No. 24,572

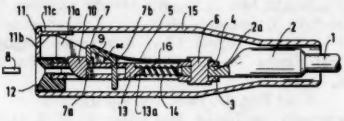
Claims priority, application Sweden, Jul. 19, 1976, 7608200

Int. Cl.³ A44B *11/26*

U.S. Cl. 24—230 A **4 Claims**

1. A receiving part for a safety belt for vehicles, wherein the safety belt has a substantially disc-shaped coupling tongue, comprising: guiding plate means forming a space therebetween for receiving said coupling tongue, locking means in said receiving part and movable in a direction transverse to said guiding plate means to lock said tongue therebetween, a wedge-shaped operating member displaceable along at least one of said guiding plate means, said operating member having

surface means forming a wedge angle with said guiding plate means and facing away therefrom, said locking means having a wedge-shaped portion with substantial surface areas extending parallel to and resting on said surface means of said operating member, and spring means biasing said locking means such that said areas engage said surface means of said operating member.



4,266,326

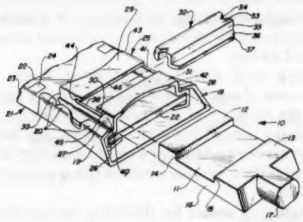
WATCHBAND CONNECTOR

Lai F. Hong, Blk. E & G, 15/F., Kingsway Ind. Bldg., 173-175, Wo Yi Hop Rd., Kwai Chung, N.T., Hong Kong

Filed Aug. 6, 1979, Ser. No. 63,725

Int. Cl.³ A44C *5/18*

U.S. Cl. 24—265 WS **2 Claims**



1. An arrangement for connecting a wrist watch case to a watch band, comprising:

at least one male lug member projecting outwardly from the watch case,

a female connector assembly disposed on at least one end of the watch band, and

a locking member for preventing disengagement of said male lug member and said female connector assembly,

said male lug member comprising a transversely disposed slotted portion of configuration as to accommodate said locking member,

said female connector assembly comprising at least one side wall provided with an opening portion of such configuration as to enable access of said locking member through the side wall to said slotted portion of said male lug member,

said male lug member comprising two coplanar raised flat, spaced-apart surfaces extending transversely to the long axis of the watch band and a parallel lowered flat surface disposed between said raised flat surfaces,

said female connector assembly side wall comprising two parallel raised sections and a lowered section disposed between said raised sections,

said female connector assembly further comprising a first and a coplanar second flat upper face spaced apart from each other, with each of said faces bridging one of said raised sections of said side wall, with the edge of each of the faces forming lips which extend over the lowered section of said side wall, and with each of said flat upper faces overlying one of said raised surfaces of said male lug member when said male lug member is engaged within said female connector assembly, with the space between said upper face being less than that between the male lug member surfaces,

said locking member comprising an elongated planar top portion of substantially the same length as the bridging axis of the connector assembly,

a first and second neck portion parallel to each other and substantially perpendicular to and below said top portion,

a first and a second shoulder portion being attached to said first and second neck portions, respectively, and extending substantially perpendicularly outwardly therefrom,

one edge of said male lug member abutting against said side wall of said female connector assembly after insertion through said opening formed by said first side wall and said lips of said female portion and the outwardly directed edges of said shoulders abutting the inward edges of said two raised surfaces of said male lug member.

4,266,327

RELEASABLY INTERLOCKING NEEDLESTRIP AND NEEDLE-CARRIER FOR TEXTILE MACHINES

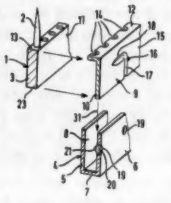
Josef Egerer, Schwabach, Fed. Rep. of Germany, assignor to Staedtler & Uhl, Schwabach, Fed. Rep. of Germany

Filed Feb. 8, 1980, Ser. No. 119,611

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1979, 2909525

Int. Cl.³ D06C *3/10;* **D01H** *5/14;* **D01G** *19/10*

U.S. Cl. 28—299 **10 Claims**



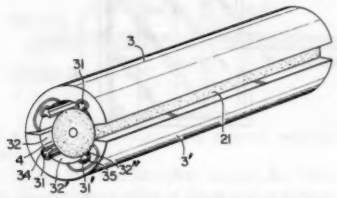
1. Releasably interlockable needlestrip and needle-carrier for textile machines comprising a generally U-shaped elongated needle carrier having a pair of longitudinally extending spaced legs connected at one each of the corresponding ends thereof by a transverse bight section, said legs and bight section thereby defining a longitudinally extending recess therebetween, a plurality of protuberances provided on one of said legs projecting into said recess, an elongated needlestrip having opposed sidewalls and top and bottom faces, a bracket member having a least a pair of legs angularly connected relative to each other such that one of said legs is positionable in abutting relationship with one of the sidewalls of said needlestrip and the other of said legs is positionable in abutting relationship with the top face of said needlestrip, said needlestrip and bracket member when positioned in said abutting relationship being dimensioned and configured to fit snugly within the recess of said needle carrier, and a plurality of slots formed in the surface of said one leg of the bracket member remote from the sidewall of the needlestrip, each said slot having a first vertically extending segment and a second longitudinally extending segment, said protuberances and slots being so configured and arranged on said needle-carrier and bracket member that upon insertion of the needlestrip and abutting bracket member into the recess of said needle carrier said protuberances are alignable with the vertical segments of corresponding slots and are slidable therein for mechanical and releasable interlocking of the needlestrip, bracket member and needle-carrier.

4,266,328

DEVELOPING ROLL FOR USE IN ELECTROSTATIC DEVELOPING APPARATUS EMPLOYING MAGNETIC PARTICLES

Hideki Harada, Urawa; Keitaro Yamashita, Kamisatomachi, and Katsunobu Yamamoto, Kumagaya, all of Japan, assignors to Hitachi Metals, Ltd., Japan

Division of Ser. No. 839,446, Oct. 5, 1977, Pat. No. 4,168,481.
This application May 10, 1979, Ser. No. 37,905
Int. Cl.[3] B21B *13/02*; G03G *15/09*
U.S. Cl. 29—116 R 2 Claims



1. A developing roll for use in electrostatic image-developing apparatus employing magnetic particles comprising:

a shaft;

a columnar permanent magnet mounted on the shaft and having on its curved surface an even number of evenly spaced magnetic poles for producing evenly spaced major peaks of magnetic flux of alternating polarity in an axially extending uniform magnetic field with peripheral reversals of polarity; and

an outer non-magnetic shell surrounding the permanent magnet in a spaced relation therefrom, said shell and said magnet being rotatable relative to each other;

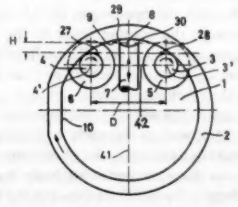
said magnet having partially weakened magnetic field portions along its peripheral line for producing a minor peak associated with each of individual ones of said evenly spaced major peaks, said associated major and minor peaks being of the same polarity for easing the gradient of polarity inversion.

4,266,329

APPARATUS FOR POSITIONING OUT-OF-ROUND WORKPIECES PARTICULARLY PISTON RINGS

Otto Feller, Leichlingen; Alois Skrobek, Burscheid, and Wilfried Schmitz, Cologne, all of Fed. Rep. of Germany, assignors to Goetze AG, Burscheid, Fed. Rep. of Germany

Filed Sep. 20, 1979, Ser. No. 77,090
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1978, 2840863
Int. Cl.[3] B23P *15/10*
U.S. Cl. 29—222 13 Claims



1. Apparatus for positioning an out-of-round workpiece in the form of a ring having an out-of-round inner circumferential face with a radially inwardly directed portion that deviates from said out-of-round contour, said apparatus comprising

first and second spaced cylindrical rollers having a predetermined distance therebetween, the diameter of each of said rollers being substantially less than the diameter of said workpiece;

means for rotating said rollers about their respective longitudinal axes in the same direction; and

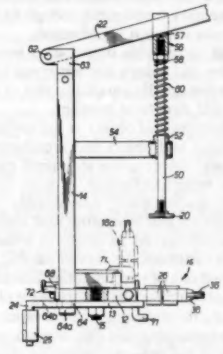
braking means interposed between said rollers and spaced therefrom, the frontal face of said braking means facing said workpiece being positioned with respect to the peripheral surfaces of said cylindrical rollers so that said frontal face contacts only the portion of the inner circumferential face of said workpiece which deviates from said out-of-round contour, said rollers being spaced from said workpiece when the frontal face of said braking means is in contact with said workpiece and in contact with said workpiece at all other positions thereof, only the weight of said workpiece resting on said rollers.

4,266,330

SECUREMENT OF COUPLINGS TO LENGTHS OF HOSE

Laurino Conte, 2 Gladhall Ave., Thornbury, Victoria, Australia

Filed Oct. 24, 1978, Ser. No. 954,280
Claims priority, application Australia, Oct. 28, 1977, PD2230
Int. Cl.[3] B23P *19/04*
U.S. Cl. 29—267 21 Claims



1. Apparatus for mounting an end-fitting on a hose comprising:

respective first and second adjustable clamp assemblies carried by a support plate at spaced apart positions along the periphery thereof, which first clamp assembly defines opposed arcuate edges or faces defining an adjustable opening outwardly of the plate in which a length of hose may be clamped for application of an end-fitting thereto, while the second clamp assembly defines opposed straight edges or faces between which parallel side edges of a first part of the end-fitting may be thereafter clamped to facilitate tightening of a second part of the end-fitting onto the length of hose;

a post demountably or fixedly carried by said support plate;

a press head moveably disposed relative to said post and having a press face overlying said adjustable opening of the first clamp assembly; and

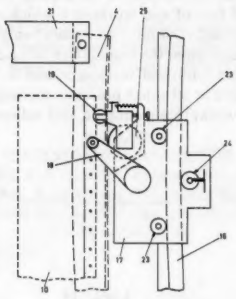
a lever assembly supported by said post for moving the press head towards said opening for forcing the end-fitting, or part thereof, onto the end of the hose held in the opening.

4,266,331

METHOD OF MAKING A MIRROR

Jerome Grassin, Vanves; Maurice Thouvenin, Parmain, and Jean-Claude Epie, Montmorency, all of France, assignors to Saint-Gobain Industries, Aubervillers, France

Division of Ser. No. 776,613, Mar. 11, 1977, Pat. No. 4,150,874.
This application Mar. 12, 1979, Ser. No. 19,615
Claims priority, application France, Mar. 17, 1976, 76 07756
Int. Cl.[3] B23P 11/02
U.S. Cl. 29—449 12 Claims



1. A method for making a mirror in which a plurality of reflecting components are supported by a frame, said method comprising the steps of:

inserting a deformable object into two spaced-apart thrust bearings such that said deformable object is adjacent a structural member that is rigid enough to hold said object in a contour to which it is deformed,

contacting said deformable object with movable apparatus for deforming said object, said apparatus being movable in a direction substantially parallel to that of said deformable object and said structural member,

elastically deforming said object as the deforming apparatus is moved along said object and simultaneously attaching the deformable object to the structural member, the foregoing steps being performed at least twice to make a plurality of spaced-apart, substantially parallel curved support members that constitute said frame, said support members being curved to conform substantially to the contour of a continuously curved mirror, and

mounting at least one of said reflecting components on a pair of said support members by deforming a plane rectangular reflecting strip to conform to the curvature of said support members and attaching said strip thereto, said deformation taking place at the time the reflecting strip is attached to said support members.

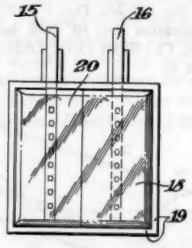
4,266,332

THIN ELECTROLYTIC CAPACITOR MANUFACTURE

Mark Markarian, Williamstown, and Henry F. Puppolo, North Adams, both of Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Apr. 2, 1979, Ser. No. 26,466
Int. Cl.[3] H01G 9/10
U.S. Cl. 29—570 5 Claims

1. The method of producing a flat electrolytic capacitor section with a vapor barrier comprising the steps of winding anode and cathode foils with interleaved spacers and attaching electrode tabs to form a capacitor section and partially flattening said section, impregnating with electrolyte, and compressing said section to complete the flattening and squeeze out excess electrolyte, then thermally sealing said section in a heat sealable vapor-barrier material chosen from the group consisting of films of polyester, perfluoroethylene, cellophane, polyolefin, and laminates thereof with aluminum foil in the form of a polymer-foil-polymer laminate, said heat-sealable material being adhesive-coated, said sealing being attained by placing said section between layers of said heat sealable material, said electrode tabs extending beyond said section and beyond the edges of said heat sealable material, said heat sealable material enveloping said section and extending to a point on said tabs



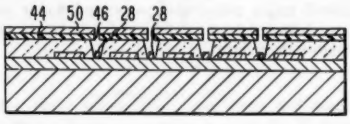
short of the site of a tab-lead connection, placing an adhesive between said tabs and that portion of said heat sealable material adjacent said tabs, and heat-sealing said heat sealable material at least all around the periphery of said section including said tabs to provide a sealed section having said vapor barrier.

4,266,333

METHOD OF MAKING A SCHOTTKY BARRIER FIELD EFFECT TRANSISTOR

Walter F. Reichert, East Brunswick, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 27, 1979, Ser. No. 33,827
Int. Cl.[3] H01L 21/28
U.S. Cl. 29—571 7 Claims



1. A method of making a Schottky barrier field effect transistor comprising the steps of:

(a) forming spaced source and drain contacts on a surface of a body of a semiconductor material,

(b) coating the source and drain contacts and the exposed portions of said surface of the semiconductor body with a relatively thick layer of an insulating material,

(c) providing on said insulating layer a layer of photoresist having an opening therethrough over the space between the source and drain contacts,

(d) forming through the opening in the photoresist layer an opening through the coating layer to the surface of the semiconductor body such that the walls of the opening in the insulating layer extend back away from the edge of the opening in the photoresist layer,

(e) simultaneously depositing separate metal layers on the photoresist layer and on the surface of the semiconductor body through the opening in the photoresist layer with the metal layer on the semiconductor body being of a width corresponding to the width of the opening in the photoresist layer,

(f) removing the photoresist layer and the metal layer thereon, and

(g) leaving the insulating layer on the source and drain contacts and the semiconductor body.

4,266,334

MANUFACTURE OF THINNED SUBSTRATE IMAGERS

Thomas W. Edwards, Mount Joy, and Ronald S. Pennypacker, East Petersburg, both of Pa., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 29, 1979, Ser. No. 98,699
Claims priority, application United Kingdom, Jul. 25, 1979, 25870/79
Int. Cl.[3] H01L *21/96*
U.S. Cl. 29—583 13 Claims

1. A method of manufacturing thinned substrate imagers comprising the steps of:

masking one surface, hereafter termed the "front surface" and the peripheral edge of the opposite surface, hereafter termed the "back surface" of a wafer formed of the substrate to prevent attack by the thinning bath described in the following step:

placing the wafer in a thinning bath which attacks that part of the wafer which is not masked, for a length of time sufficient to remove the unmasked portion of the back surface to a desired depth, whereby there remains a thinned wafer with an unthinned rim around its peripheral edge;

removing the thinned wafer from the bath; and

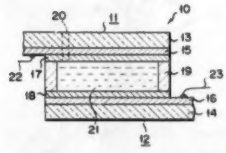
glueing to the thinned region of the back surface of the wafer, a sheet of glass which fits into wafer within the unthinned rim thereof.

4,266,335

METHOD OF PRODUCING ELECTROCHROMIC DISPLAY DEVICE

Shoichi Matsumoto; Hirohisa Kato, both of Yokohama, and Yusuke Wada, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 2, 1979, Ser. No. 16,786
Claims priority, application Japan, Mar. 10, 1978, 53-26663
Int. Cl.[3] G02F *1/13*
U.S. Cl. 29—592 R 9 Claims



1. A method of producing an electrochromic display device comprising:

applying under an inert atmosphere a solution containing at least one transition metal compound selected from the group consisting of halides and alkoxides of transition metals dissolved in an organic solvent to the surface of at least one of two electrode substrates, at least one of said substrates being transparent, thereby forming a thin layer of said solution;

drying the thin layer of solution by using a temperature between room temperature and 120° C. to form an electrochronic layer on the surface of the electrode substrate; and

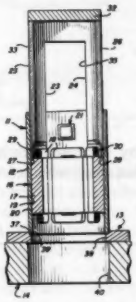
fixing the two electrode substrates in a manner to face each other with an ionic conductor layer disposed therebetween.

4,266,336

FIXTURES AND METHODS FOR DYNAMO SERVICING

Michael K. Kasey, Palatine, Ill., assignor to The Echlin Manufacturing Company, Branford, Conn.

Filed Jul. 26, 1979, Ser. No. 60,910
Int. Cl.[3] H02K *15/02, 15/14*
U.S. Cl. 29—596 13 Claims



1. Apparatus for use between a pair of press elements which are movable toward each other in effecting axial movement of a field structure of a dynamo relative to a casing structure thereof, said field structure including a core having an external cylindrical surface and winding means on said core having portions projecting axially from opposite ends thereof and said casing structure including an internal cylindrical surface engageable by said external cylindrical surface with a press fit, said apparatus comprising: a fixture having an engagement surface for engagement with one of said press elements and at least a pair of wall portions disposed in diametrically opposed relation with respect to a central axis normal to said engagement surface, said wall portions having cylindrical outer surface portions for sliding engagement with diametrically opposed portions of said internal cylindrical surface of said casing structure and having end surfaces in a plane transverse to said central axis for engagement with end surface portions of said core of said field structure.

4,266,337

ELECTRIC HEATING ELEMENTS

George C. Gedeon, Pittsburgh, Pa., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Jul. 11, 1979, Ser. No. 56,554
Int. Cl.[3] H01C *17/00;* B21B *37/02*
U.S. Cl. 29—614 9 Claims

1. Apparatus for rolling a rectilinear metal-sheathed electric heating element to a final target length, comprising:

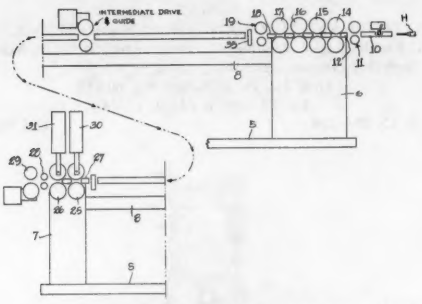
a first set of reduction rolls for reducing the cross section of said sheath an amount less than the amount at final target length,

a pair of measuring devices at longitudinally-spaced places along the movement of said sheath through said apparatus, one measuring device cooperable with an unrolled portion of said sheat as it passes through said apparatus and another measuring device cooperable with a rolled portion of said sheath as it passes through said apparatus, said other device providing a signal indicative of an increase in sheath length as a result of rolling by said first set of reduction rolls.

a further set of reduction rolls downstream of said measuring devices, and

means actuated by said signal to adjust the bight of said

further set of reduction rolls, so as to further reduce the cross section of said sheath to equal that at said final target



length and thereby increase sheath length to said final target length within acceptable tolerances.

4,266,338

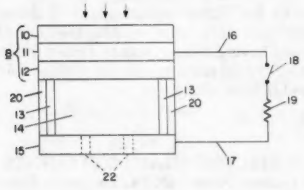
METHOD OF MANUFACTURING PHOTOELECTROCHEMICAL CELL

Schoen-nan Chen, North Brunswick, N.J.; Michael A. Russak, Farmingdale, N.Y.; Horst Witzke, Princeton, N.J.; Joseph Reichman, Great Neck, N.Y., and Satyendra K. Deb, East Brunswick, N.J., assignors to Grumman Aerospace, Bethpage, N.Y. and Refac Electronics, Barkhamsted, Conn.

Division of Ser. No. 880,071, Feb. 22, 1978, Pat. No. 4,172,925. This application Mar. 14, 1979, Ser. No. 20,373

Int. Cl.[3] H01M *6/30, 6/36*

U.S. Cl. 29—623.2 **4 Claims**



1. A method of fabrication of a photoelectrochemical cell comprising the steps of:

(a) depositing a semiconductor thin film containing a material other than zinc selenide on a conductive substrate transmissive to electromagnetic irradiation, thereby forming a first electrode,

(b) performing a post deposition treatment of the coated substrate,

(c) placing an inert gasket material around the perimeter of said electrode,

(d) placing a stable counterelectrode on said gasket,

(e) sealing the cell with a non-conductive sealant, and

(f) filling the cell with an electrolyte;

wherein said depositing step comprises one or more of the group of steps of sputtering, chemical vapor deposition, vacuum evaporation, and electrodisposition; and further

wherein said depositing step comprises the step of doping said semiconductor with zinc selenide.

4,266,339

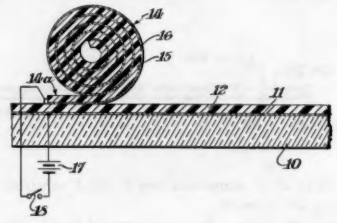
METHOD FOR MAKING ROLLING ELECTRODE FOR ELECTROSTATIC DEVICE

Charles G. Kalt, Williamstown, Mass., assignor to Dielectric Systems International, Inc., North Adams, Mass.

Filed Jun. 7, 1979, Ser. No. 46,270

Int. Cl.[3] H05K *3/00*

U.S. Cl. 29—829 **12 Claims**



1. A method for making an electrostatically controllable device having a rolling electrode comprising:

(a) depositing a metal film on only one side of a tentered plastic sheet;

(b) heating said tentered sheet to a temperature greater than that corresponding to the 0.5 percent tenter-relief shrinkage characteristic of said sheet;

(c) cooling said sheet to shrink said plastic and to cause said metallized sheet to cure metal-outward to form a tight roll; and

(d) attaching the outermost end of said roll to an insulated surface of a fixed electrode so that when a voltage is impressed between said metallized plastic sheet and said fixed electrode, said tight roll is attracted to said fixed electrode and is unrolled.

4,266,340

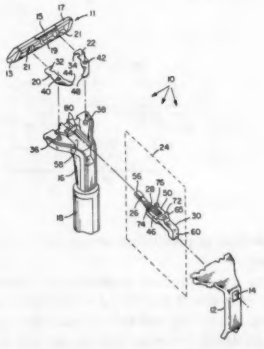
RAZOR HANDLE FOR MOUNTING PIVOTABLE RAZOR BLADE CARTRIDGES

Peter Bowman, Sandy Hook, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Jun. 11, 1979, Ser. No. 47,592

Int. Cl.[3] B26B *21/06, 21/52*

U.S. Cl. 30—89 **7 Claims**



1. In a razor handle comprising a housing having first and second pivot means, first and second arms mounted on said first and second pivot means respectively and adapted to engage first and second portions respectively of a razor blade assembly, cam follower means disposed within said housing and comprising a substantially rigid spring-biased member having a forward end projecting from said housing and being

reciprocably movable in response to a force applied thereto by pivotal movement of said razor blade assembly on said first and second arms, a pusher means disposed on said housing and operatively connected to said first and second arms, said pusher means, upon actuation thereof by an operator, effecting movement of said first and second arms each away from the other upon said first and second respective pivot means whereby to release said blade assembly, the improvement comprising

said cam follower member including a first stop surface extending transversely of said direction of reciprocation and facing substantially in the direction of said cam follower member forward end and a second stop surface extending transversely of said direction of reciprocation and facing substantially opposite to the direction of said cam follower means forward end;

said pusher means including a recess for slidably receiving a rear portion of said reciprocable cam follower member and a stop surface extending transversely of said direction of cam follower member reciprocation and positioned to engage said cam follower member first stop surface; and

said biasing spring comprising compression spring means encircling a portion of said cam follower member, said spring acting in compression oppositely on said cam follower member second stop surface and said pusher means to bias said cam follower member forward relative to said pusher means such that said cam follower member first stop surface and said pusher means stop surface are normally in limiting engagement when no blade assembly is in said razor.

4,266,341

HAIR TRIMMING APPARATUS

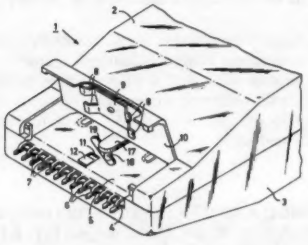
Antonius P. J. A. Claassens, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 26, 1979, Ser. No. 24,126

Claims priority, application Netherlands, Jun. 30, 1978, 7807173

Int. Cl.³ B26B *19/00*

U.S. Cl. 30—195 **6 Claims**



1. A hair trimming device, which comprises a stationary cutting element having a longitudinally extending side provided with teeth extending in a direction substantially transverse to said side; a second cutting element drivable relative to the stationary cutting element in said transverse direction, said drivable cutting element having a longitudinally extending side provided with teeth extending in a direction substantially transverse to said latter side, each tooth of the drivable cutting element cooperating with a corresponding tooth of the stationary cutting element to form a pair, the two teeth in each pair at least partly overlapping each other, and adjacent pairs being spaced from each other; a recess formed in at least one side edge of each tooth of one of said cutting elements, at least a part of the edge of said recess constituting a cutting edge; and cutting edge on each tooth of the other cutting element, the cutting edges on the teeth of each pair cooperating with each other.

4,266,342

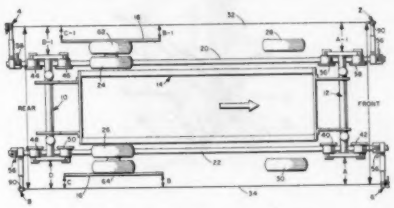
SUPPORTING ASSEMBLY FOR AN ALIGNMENT LINE

Bernard E. Cors, deceased, late of Aurora, Ill., and Bette M. Cors, executrix, 403 W. Galena Blvd., P.O. Box 1406, Aurora, Ill. 60506

Filed May 2, 1978, Ser. No. 902,119

Int. Cl.³ G01B *5/00*

U.S. Cl. 33—1 Q **7 Claims**



1. An apparatus for use in providing a point of reference for aligning vehicles with respect to a railway track comprising:

a first reference line support device for engaging with the top of a first rail of said track, said first support device including a first reference line support arm, a first coupling arm having a first end connected with said first reference line support arm and a second end connected to a first clamping mechanism for attaching said first support device to the top of said first rail;

a second reference line support device for engaging with the top of said first rail, said second support device including a second reference line support arm, a second coupling arm having a first end connected with said second reference line support arm and a second end connected to a second clamping mechanism for attaching said second support device to the top of said first rail;

a first reference line for interconnecting said first and second support arms;

a first reference line attachment device attached to said first support arm;

a reference line supply spool attached to said second support arm to which one end of said first reference line is coupled, said first reference line being further provided at its other end with a second reference line attachment device for engaging with said first attachment device;

a handle coupled to said supply spool for imparting rotative movement thereto and a locking mechanism for locking said supply spool to prevent its rotation;

said first and second clamping mechanism each comprising a stationary frame for engaging with the top and a side of said first rail and a pivotal adjustable releasable lockable vise clamp mechanism for engaging with another side of said first rail; and,

said first and second coupling arms being adjustable and allowing relative movement between respective said first and second support arms and said first rail, each said first and second coupling arms comprising a first tubular outer sleeve coupled to a respective said stationary frame for engagement with said first rail and a first tubular inner sleeve connected to a respective said support arm and adapted for slidable mov. .ent in said first tubular outer sleeve.

4,266,343

SPRING LOADED CLAMPING DEVICE FOR DRAFTING PARALLEL LINES

Roman Gorelik, 1150 S. Glencoe St., Denver, Colo. 80222

Filed Sep. 13, 1979, Ser. No. 75,497

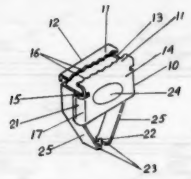
Int. Cl.³ B43L *13/00*

U.S. Cl. 33—41 D **2 Claims**

1. An apparatus for drawing parallel lines, comprising in combination:

two line making means, each including a body of generally elongated cylindrical shape ending in a marking point;

a pair of generally flat planar arms disposed in opposed facing relationship and adapted to be operatively connected together to clamp said line making means therebetween, each arm including a clamping portion facing the opposite arm, said clamping portions adapted to grasp the body of the said two line making means therebetween; and



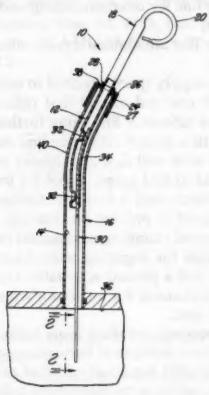
a leaf spring connected to and extending from each of said arms, each of said leaf springs having an opening at the termination thereof adapted to receive and hold said line making means, each of said leaf springs exerting a force against one of said line making means to thereby position said one line making means against the other line making means.

4,266,344

DIPSTICK ALIGNMENT GUIDE

Mason E. Richardson, Clinton Township, Macomb County, Mich., assignor to Estan Manufacturing Company, Troy, Mich.

Filed Sep. 18, 1979, Ser. No. 76,760
Int. Cl.³ G01F *23/06*
U.S. Cl. 33—126.7 R **13 Claims**



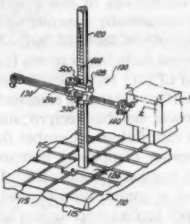
1. A dipstick assembly of the type used for measuring the fluid level within a chamber, said dipstick assembly comprising: an insertion means for indicating the fluid level within a chamber, access means connected to said chamber, said insertion means including a rigid arcuate body portion and a flexible elongated fluid level indicating means connected to said insertion means and extending outwardly therefrom, said access means receiving said insertion means and said indicating means, said access means including a rigid arcuate portion of substantially the same arcuate contour as said rigid arcuate portion of said insertion means, said access means and said body portion of said insertion means cooperating to limit insertion of said insertion means and to prevent excessive relative rotation of said insertion means when received in said access means whereby said fluid level indicating means will be properly oriented so as to accurately indicate the level of the fluid within said chamber.

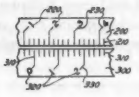
4,266,345

MEASUREMENT INDICATORS FOR A MEASURING MACHINE

Martin B. Alice, Englewood, and John W. Grass, Middletown, both of Ohio, assignors to The Bendix Corporation, Southfield, Mich.

Filed May 27, 1980, Ser. No. 153,498
Int. Cl.³ G01B *5/20, 3/02*
U.S. Cl. 33—169 R **2 Claims**





1. A measuring apparatus comprising: a base; a probe; a horizontal and vertical members, with said horizontal and vertical members movably coupled together and mounting said probe to said base while allowing movement of the probe in horizontal and vertical directions; and measurement scales mounted on each of said members, each scale including spaced measurement divisions along its length and means associated with said scale for indicating a measurement, the improvement wherein:

the two measurement scales are substantially identical in their measurement indicia including a plurality of reference numerals associated with respective measurement divisions, said reference numerals being positioned at an acute angle of approximately 45° with respect to the length of said scale.

4,266,346

METHOD AND APPARATUS FOR GAGING

Robert D. Olschefski, Wixom, Mich., assignor to N.B.E. Corporation, Walled Lake, Mich.

Filed Jun. 5, 1980, Ser. No. 156,826
Int. Cl.³ G01B *7/12, 7/31*
U.S. Cl. 33—174 Q **22 Claims**

1. A method of gaging a feature of circular shape on a workpiece, the method comprising the steps of:

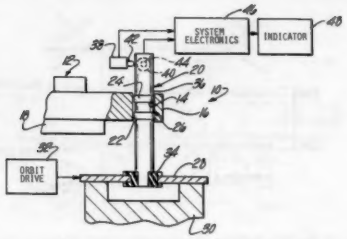
interfitting a circularly-shaped contact section of an elongate probe over said feature with a clearance space therebetween;

causing said probe to undergo a wobbling rotation, said wobbling rotation being constrained in part by contact with the surface of said gaged feature;

measuring the motion of a probe extension section axially displaced from said contact section along orthogonal axes in a plane normal to the axis of said feature as said probe undergoes said wobbling rotation;

whereby said motion thereof along said orthogonal axes varies in accordance with the diameter of said gaged feature and with said axis position of said gaged feature

due to the constraint of said contact section with said surface of said gaged feature to thereby establish a measurement of the diameter and axis position of said gaged feature.



4,266,347

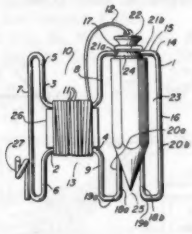
HOLDER FOR A PLUMB BOB

Lester Illgen, Rte. 2 - Box 34, Lockport, Ill. 60441

Filed Sep. 7, 1979, Ser. No. 73,403

Int. Cl.³ G01C *15/10*

U.S. Cl. 33—393 **10 Claims**



1. A holder for a plumb bob, comprising a planar spool section on which to wind the cord of a plumb bob, said planar spool section lying in a single plane, and a rack section to receive and hold a plumb bob, said rack section including a planar portion lying in a first plane and an extending portion extending outwardly from said first plane to hold said plumb bob in spaced apart relationship with said planar portion of said rack section.

4,266,348

FLUIDIZED BED PROCESS

Willard E. Ledding, Clarendon Hills, Ill., assignor to CPC International Inc., Englewood Cliffs, N.J.

Division of Ser. No. 970,069, Dec. 15, 1978, Pat. No. 4,237,619. This application Mar. 31, 1980, Ser. No. 136,131

Int. Cl.³ F26B *3/08*; C13L *1/00*

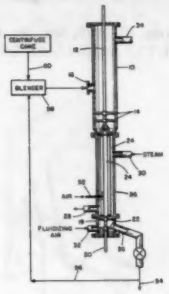
U.S. Cl. 34—10 **5 Claims**

1. A process for the fluidized drying of starch comprising the steps of:

(a) feeding supply starch having a moisture content of up to 27% by weight to an upper fluidized zone while continuously subjecting the starch therein to mechanical agitation,

(b) passing the agitated fluidized solids in the upper fluidized zone downwardly against the fluidizing gas through a plurality of tubular zones to a lower fluidized zone while mechanically agitating the starch in the lower fluidized zone,

(c) contacting the tubular zones with heat exchange media to supply heat to the starch in the tubular zones to a temperature such that the wet-bulb temperature of the fluidizing gases exiting from the upper fluidized zone is at least 54° C., and



(d) recovering starch having a moisture content of less than 19% by weight.

4,266,349

CONTINUOUS SOLE FOR SPORTS SHOE

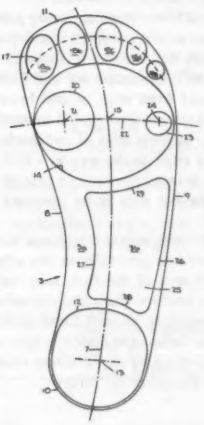
Michael W. Schmohl, Nuremberg, Fed. Rep. of Germany, assignor to Uniroyal GmbH, Aachen, Fed. Rep. of Germany

Filed Nov. 17, 1978, Ser. No. 961,915

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1977, 2753205

Int. Cl.³ A43B *13/04*; A43C *15/00*

U.S. Cl. 36—32 R **18 Claims**



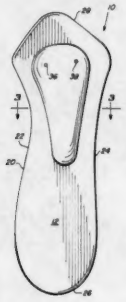
1. Footwear having a toe portion and a heel and a continuous outsole from said toe portion to said heel portion, said outsole having a profile pattern comprising a first pattern section in the area of the ball of the foot and a second pattern section in the area of the heel of the foot, said first and second pattern sections being respectively characterized by first and second substantially large circular shapes at the ball and heel areas for facilitating rotation of said foot at said ball and heel areas, said first and second large circular shapes having center points disposed substantially on a longitudinal dividing line extending from an end of said toe portion to an end of said heel portion and dividing said outsole into two substantially equal longitudinal areas, and wherein said first large circular shape encompasses the ball area of the foot and at least one small circular shape, said one small circular shape having a center point disposed on one side of the longitudinal dividing line.

4,266,350

FOOTWEAR INSOLE

Joseph J. Laux, Scottsdale, Ariz., assignor to Ormid Company, Phoenix, Ariz.

Filed Aug. 20, 1979, Ser. No. 67,691
Int. Cl.[3] A43B *13/40, 7/06*
U.S. Cl. 36—44 **2 Claims**



1. An insole for footwear comprising:

(a) An upper laminate of split suede leather having the entire upper surface of suitable texture to minimize slippage relative to the wearer's foot, said upper laminate having adequate porosity to "breath", allowing air to the wearer's foot;

(b) a lower laminate of resilient material having a bottom surface having suitable frictional characteristics to minimize slipping relative to footwear;

(c) said upper and lower laminate being joined over substantially the entire contact area and having an outer configuration generally conforming to footwear to be worn and having a lateral side, medial side and front and rear edges, and at least said front edge of said lower laminate being upwardly and outwardly beveled toward said upper laminate whereby the front edge of said insole does not present an obstructing edge to the wearer's foot;

(d) an adhesive area on the bottom side of said lower laminate, said adhesive area being covered by a removable covering; and

(e) resilient cushioning means interposed between said upper and lower laminate generally in the area conforming to the metatarsal area of the foot, said resilient cushioning means being a resilient foam and extending rearwardly to an area intermediate to said front and rear edges, said upper laminate defining at least one aperture therethrough in the area occupied by said resilient cushioning means to further allow the insole to "breath".

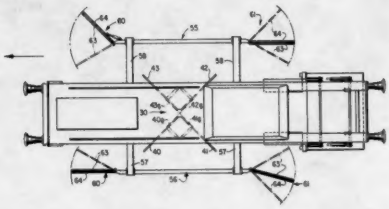
4,266,351

CENTER PLOW FOR RAILROAD BALLAST

Emmett W. Cox, West Columbia, S.C., assignor to Canron Corporation, West Columbia, S.C.

Filed Oct. 11, 1979, Ser. No. 83,947
Int. Cl.[3] E01B *27/04*
U.S. Cl. 37—104 **6 Claims**

1. A railroad ballast plow comprising a four element plow member of substantially X shaped configuration mounted to be centrally of the track on a track travelling vehicle for vertical movement into and out of engagement with the ballast, each plow element having at its end adjacement the intersection



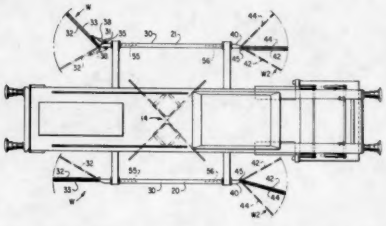
point of the X a ballast passing gate, and means to individually open and shut each of the four gates.

4,266,352

BALLAST SIDE PLOW

George R. Newman, West Columbia, S.C., assignor to Canron Corporation, West Columbia, S.C.

Filed Oct. 11, 1979, Ser. No. 83,945
Int. Cl.[3] E01B *27/04*
U.S. Cl. 37—105 **3 Claims**



1. A railroad ballast plow device attached in a parallel upright position to one side of a railroad ballast plowing machine, said plow device comprising a longitudinally extending substantially rectangular main plowboard; a first wing means pivotally connected to a leading edge of said plowboard; a second wing means pivotally attached to a trailing edge of said plowboard; and first and second wing means each comprising an inner and an outer flap independently rotatable about a substantially vertical hinge line on one of said leading and trailing edges, relatively to said plowboard; and means to rotate said flaps.

4,266,353

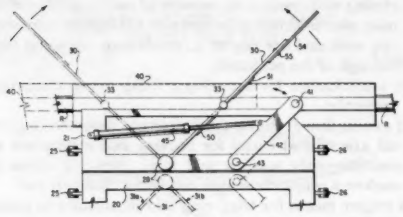
DEVICE FOR PLOWING BALLAST

George R. Newman, West Columbia, S.C., assignor to Canron Corporation, West Columbia, S.C.

Filed Oct. 11, 1979, Ser. No. 83,946
Int. Cl.[3] E01B *27/04*
U.S. Cl. 37—105 **3 Claims**

1. A railroad ballast plow comprising a wheeled chassis, a pair of plow blade means each pivotally mounted on a frame means located beneath and centrally of said chassis for pivotal movement about a substantially vertical axis, each plow blade means extending outwardly from its pivotal mount; longitudinally extending tunnel means for covering each track rail,

pivotally mounted on and carried by its respective plow blade means; and means to pivot each blade means relative to said



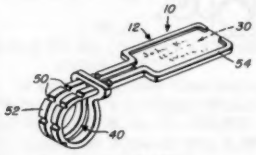
chassis and on its tunnel means, to adopt a plurality of ballast plowing configurations.

4,266,354

LUGGAGE MARKER

Robert H. C. M. Daenen, Hekelgem, Belgium, assignor to Dart Industries Inc., Los Angeles, Calif.

Filed Aug. 16, 1979, Ser. No. 66,899
Int. Cl.³ G09F *3/14, 3/20*
U.S. Cl. 40—21 R **6 Claims**



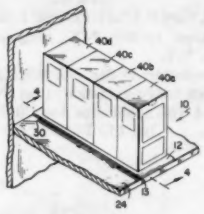
1. A unitary molded luggage marker comprising an elongated indicia receiving body portion, an axially extending elongated bifurcated strap having spaced apart legs defining an axially extending slot, said strap extending axially from said body portion, said strap legs distal to said body portion being closed by a bight portion defining a transversely extending elongated slot, the bifurcation of the strap being dimensioned to allow the passage of the body portion therethrough with the legs received in the opposed end portions of the elongated slot for providing a strap loop for fastening the marker to a piece of luggage, means integral with the strap for selectively fixing the dimension of a loop so formed as the strap is pulled tight, said means for selectively fixing the dimension of a strap loop formed comprising lock means carried by said bight portion and said legs for releasably securing said bight portion relative to said spaced apart legs of said elongated bifurcated strap, said lock means including a tab means carried by said bight portion and comprising a transversely extending axially disposed and projecting tab for coaction with tab detent means, said detent means being carried by said strap legs on a surface thereof that upon formation of a strap loop is on the outer surface of the strap loop, said detent means comprising aligned pairs of transverse notches in said strap legs whereby formation of a strap loop is facilitated by a hinging effect provided by said notches, and said transversely extending axially disposed and projecting tab including an intermediate portion sized to maintain said legs in said transversely extending slot with the tab lockingly engaged in a pair of aligned notches in said strap legs.

4,266,355

SHELF DISPLAY

Jerome A. Moss, 333 West End Ave., New York, N.Y. 10023

Filed Dec. 26, 1978, Ser. No. 973,750
Int. Cl.³ G09F *1/00*
U.S. Cl. 40—124.1 **12 Claims**



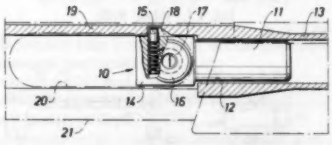
1. A display comprising a base member and a display member movably connected to said base member, and said display member comprising a message display surface, and a connecting member, one end thereof being movably connected to said base member and the other end thereof being movably connected to said display member and elastic means disposed between said base member and display member and operatively associated with said members to move said display member from a folded down position upwardly from said base member, said elastic means further comprising spring means disposed between said base member and said display means, whereby said spring means initiates the movement of said display member and said elastic means completes said movement, said display being adapted to be disposed on a shelf with merchandise on said display member, whereby removal of the merchandise actuates the elastic means to cause the display member to move upwardly from the base member so that the message display surface is viewable from the front of the shelf.

4,266,356

DEVICE FOR PREVENTING UNAUTHORIZED USE OF A FIREARM

Järvinen Uro T., Sätunavägen 18, 195 00 Märsta, Sweden

Filed Feb. 28, 1979, Ser. No. 16,078
Claims priority, application Sweden, Mar. 2, 1978, 7802389
Int. Cl.³ F41C *27/00*
U.S. Cl. 42—1 LP **2 Claims**



1. A device for preventing unauthorized use of a firearm, said device comprising a plug which is adapted to be inserted at least partially into a cartridge chamber in a barrel of a firearm and locking means for locking the plug in a position in which it projects into said chamber;

said locking means comprising a locking member which is slidably mounted in the plug or a portion rigidly connected thereto for displacement in a direction substantially perpendicular to the longitudinal axis of the plug between an inoperative or retracted position, in which it permits an unimpeded insertion of the plug into the cartridge chamber as well as an unimpeded removal of the plug from said chamber, and an operative or extended position, in which it is adapted to project into a recess in the wall of a rearwardly extending integral portion of the barrel to prevent

removal of the plug from the cartridge chamber by acting against a rear wall of said recess,

said locking means further comprising a lock, by means of which the locking member may be locked in relation to the plug in its said operative or extended position.

4,266,357

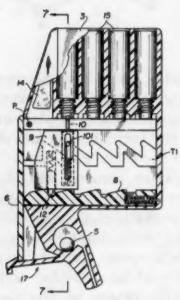
MULTIPLE UNIT FLARE LAUNCHER

John M. Greenleaf, Syosset, N.Y., assignor to Bristol Marine, Inc., Jericho, N.Y.

Continuation-in-part of Ser. No. 909,223, May 24, 1978, abandoned, which is a continuation of Ser. No. 735,559, Oct. 26, 1976, abandoned. This application Aug. 20, 1979, Ser. No. 67,964

Int. Cl.³ F41C *3/02*

U.S. Cl. 42—1 Z **12 Claims**



1. A multiple signal unit launcher comprising a plurality of signal units positioned in side by side array, and communicating at their lower ends with a common slot, single unit firing means positioned beneath said slot and said units, slide means for moving said firing means from adjacent one unit to the next and complementary cam and cam follower means engaged with each other for guiding said firing means and for activating the same for firing each unit separately.

4,266,358

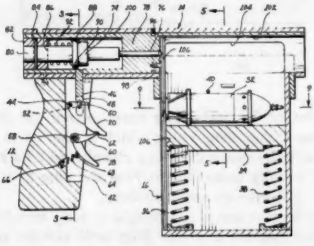
UNDERWATER FIREARM

John C. Phillips, 3148 S. 48th St., Phoenix, Ariz. 85040, and Michael D. Nobel, 3525 E. Montecito Ave., #3, Phoenix, Ariz. 85018

Filed Jan. 18, 1979, Ser. No. 4,548

Int. Cl.³ F41C *9/06*

U.S. Cl. 42—39.5 **16 Claims**



1. A firearm for discharging projectiles, said firearm comprising in combination:

(a) a barrel for discharging a projectile, said barrel having a longitudinal axis and including a firing chamber and an opening for lateral insertion of the projectile into said firing chamber to load said firearm;

(b) means for retaining the projectile within said firing chamber until discharge of the projectile or unloading of said firearm;

(c) an inner sleeve rotatably mounted within said barrel for closing said opening on rotation of said inner sleeve, said inner sleeve including an aperture configured commensurate with said opening to accommodate admission therethrough of the projectile;

(d) a mechanism for actuating a firing pin to discharge a projectile;

(e) a swing arm pivotable through an arc about the longitudinal axis of said barrel for cocking said mechanism and simultaneously rotating said inner sleeve to admit and enclose a projectile within said firing chamber; and

(f) trigger means for triggering said mechanism to actuate the firing pin and discharge a projectile.

4,266,359

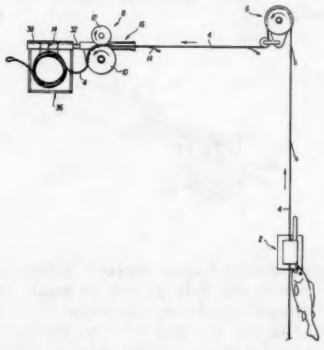
LONG LINE HOOK ARRANGING APPARATUS

Wayne E. Alex, Box 95, Juneau, Ak. 99802

Filed Oct. 9, 1979, Ser. No. 82,895

Int. Cl.³ A01K *91/06*

U.S. Cl. 43—6.5 **6 Claims**



1. A long line hook arranging apparatus comprising:

a line hauling wheel arranged to draw a fishing line along a path with spaced hooks on said line depending freely therefrom;

means defining a guide chute adjacent but below said wheel and extending along said path, said chute having an open end to receive depending hooks moving along said path;

orienting means in said chute for engaging hooks moving along said path in said chute and orienting all said hooks with their hook portions extending toward said wheel;

a fixed bar extending generally tangent to said wheel and along the top of said chute adjacent said wheel, said bar extending between said wheel and said hooks whereby, when said line is directed around said wheel away from said chute said oriented hooks successively and slidably engage over said bar;

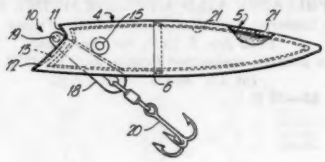
an open topped container having an upper edge flange portion in axial alignment with said fixed bar whereby hooks on said fixed bar may be slid therefrom onto said flange while said line leaving said wheel is being coiled in said container, said upper edge flange being in the form of a downwardly open channel overlying and removably embracing an end portion of said fixed bar.

4,266,360

ARTIFICAL BAIT

Brian F. Smith, 1132 Chalet Rd., R.R. 1, Sidney, BC, Canada (V8L 3R9)

Filed Jun. 15, 1979, Ser. No. 48,907
Int. Cl.³ A01K *85/00*
U.S. Cl. 43—42.09 **5 Claims**



1. Artificial bait of the type having an elongate, hollow, generally transparent body portion including transparent side wall means and a generally blunt transparent front end wall portion having an exterior and an interior surface; a coloured insert received within said body to provide same with a desired first colour means, said insert having a front edge portion spaced from said front end wall portion, whereby a front part of said side wall means adjacent to said front end wall portion is uncolored by said insert, said front end wall portion being provided with second colour means distinct from said first color means and applied only to said front end wall portion, said second color means being visible through said front part of said side wall means.

4,266,361

FISHING-TACKLE TO BE USED AS A COMBINED JIG AND SPINNER

Ole Joergensen, 24 Upsalagade, 2100 Copenhagen, Denmark, assignor to Ole Joergensen, Copenhagen, Denmark

Filed Jul. 27, 1978, Ser. No. 928,376
Claims priority, application Denmark, Aug. 3, 1977, 3463/77
Int. Cl.³ A01K *85/00*
U.S. Cl. 43—42.46 **2 Claims**

1. A fishing tackle to be used as a combined jig and spinner comprising an elongated body provided with means for securing a line or a hook, respectively, said body tapering in cross-sectional size from the rearward end to the forward end and having at said forward end a pair of wings extending outwardly from opposite sides, said wings being pitched rearwardly and upwardly from the forward end and merging into said body, thereby locating the center of gravity of said fishing tackle at approximately mid-way between the ends thereof.

4,266,362

ANIMAL TRAP LOCKING MECHANISM

Delmer E. Campbell, 1903 South Ave., Springfield, Mo. 65807, and John T. Gargis, 1507 Rocky Ford Rd., Fort Oglethorpe, Ga. 30742

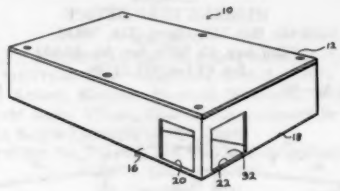
Filed Nov. 5, 1979, Ser. No. 90,878
Int. Cl.³ A01M *23/08*
U.S. Cl. 43—66 **4 Claims**

1. For use in an animal trap having a housing with a swingable gate therein for controlling access to an animal capture area, said gate being swingable from a normal closure position in response to animal exertion thereagainst, means for locking said gate at said normal position comprising:

a hinge assembly including first and second leaves with each leaf having first and second ends, said respective first ends pivotally mounted about a common hinge pin;

means mounted to said gate for pivotally mounting said second end of said first leaf thereto;

means fixed to said housing and spaced from said gate for



pivotally mounting said second leaf thereto so as to provide a swinging motion to said hinge accompanying said gate movement;

an imaginary axis passing through said gate pivot and said housing pivot; and

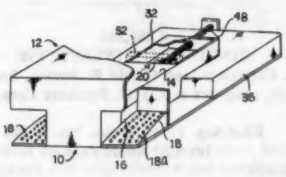
said hinge pin positioned relative to said axis at said normal gate position so as to prevent said hinge motion whereby said attached gate is non-responsive to said exertion of said animal.

4,266,363

AUTOMATIC TRAP FOR CATCHING COCKROACH

Chang C. Chen, No. 7, 12 La., Tsuey St., Pan Chiao Shih, Taipei Hsien, Taiwan

Filed Aug. 28, 1979, Ser. No. 70,465
Int. Cl.³ A01M *1/12*
U.S. Cl. 43—73 **7 Claims**



1. An automatic trap for catching cockroach comprising

a transmission mechanism including

a first clutch-pulley and a second clutch-pulley,

a transmission gear set connected for driving said first and second clutch-pulleys,

a motor connected to drive said transmission gear set;

a trapping mechanism operatively connected to said transmission mechanism and including

a trapping house forming a centrally spaced casing with an opening at its rear,

an entrance to said trapping house at two lateral sides of its front end,

a sectional U-shaped rail having slots therein located substantially centrally in said trapping house,

a connector connected for horizontal movement in said slots by extension in said slots,

a pair of slipping plates with one of each connected on opposite sides of said connector,

a sloped passage outside each said entrance of said trapping house,

a pedal switch inside said trapping house near said entrance connected for switching on said motor to move said slipping plates,

a collecting room extending from said rear opening of said trapping house,

a turning plate located for closing said rear opening between said collecting room and said trapping house,

an electric current reversing switch located substantially toward the rear of said trapping house operatively connected to reverse operation of said motor.

4,266,364

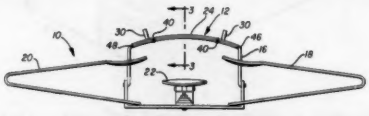
HUMANE TRAP DEVICE

Roy T. McBride, Box 725, Alpine, Tex. 79830

Filed Aug. 13, 1979, Ser. No. 66,032

Int. Cl.[3] A01M *23/26*

U.S. Cl. 43—90 **5 Claims**



1. In an animal trap having coacting, opposed, U-shaped jaws journaled to a base for pivotal movement towards and away from one another for trapping an animal therebetween, the combination of said trap and an attachment means by which a trapped animal is rendered subdued;

said attachment means includes a body, means attaching said body to one of said jaws;

a resilient member affixed to said body and extending away from the jaw; said resilient member having a chamber formed therewithin, within which a substance for subduing animals can be stored;

whereby, a substance for subduing animals can be placed within said chamber, so that when an animal is caught in the trap, and the trapped animal bites the resilient member, the substance stored within the chamber is ingested by the animal, thereby subduing the animal.

4,266,365

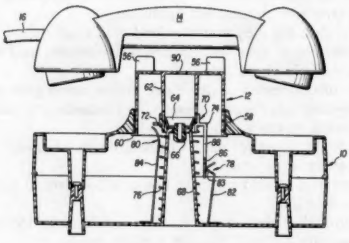
RINGING TOY TELEPHONE

Charles A. Cummings, and Gerald Rodmaker, both of Cincinnati, Ohio, assignors to C.P.G. Products Corp., New York, N.Y.

Filed Sep. 17, 1979, Ser. No. 76,316

Int. Cl.[3] A63H *33/30*

U.S. Cl. 46—33 **11 Claims**



1. A toy telephone comprising:

a base member having a bell thereon;

a handpiece supporting cradle on said base, mounted thereon for vertical movement;

biasing means urging said cradle to move upwardly;

a movable handpiece of sufficient weight to move said cradle downwardly against said biasing means when placed thereon;

bell ringing means response to downward movement of said cradle to effect ringing of said bell; and

delay means for slowing downward movement of said cradle and thereby delaying ringing of said bell to a time substantially subsequent to placing said handpiece on said cradle.

4,266,366

PREFABRICATED AIRPLANE MODEL KIT

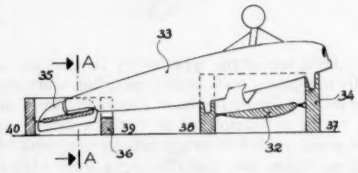
Philippe Lapierre, 4 rue Pauly, 75014 Paris, France

Filed Jan. 9, 1979, Ser. No. 2,202

Claims priority, application France, Jan. 13, 1978, 78 00972

Int. Cl.[3] A63H *27/00, 27/02*

U.S. Cl. 46—76 R **15 Claims**



1. An airplane model kit for forming an airplane model comprising:

a fuselage;

a frame-wing assembly including at least one wing and a temporary frame with which at least a portion of said at least one wing is prefabricated in an integral manner; and

means for ensuring an accurate matching of said frame-wing assembly with respect to the fuselage.

4,266,367

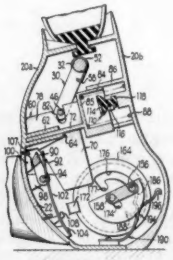
SITTING DOLL

Wayne A. Kuna, Elmhurst; Allison W. Katzman, and Rouben T. Terzian, both of Chicago, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 1, 1979, Ser. No. 8,519

Int. Cl.[3] A63H *11/14*

U.S. Cl. 46—149 **17 Claims**



1. An articulated doll having limb members and a torso and capable of assuming a sitting position from a standing position without the assistance of the user, said doll comprising:

means within said doll torso for moving said doll from a standing to a sitting position, said moving means comprising pivotal leg members being pivoted with respect to said torso;

means for controlling operation of said moving means, said controlling means comprising means for retaining said pivotal leg members in a standing position and rotatable means extending from the outer surface of said doll torso and being actuated by the user of said doll to operate said controlling means; and

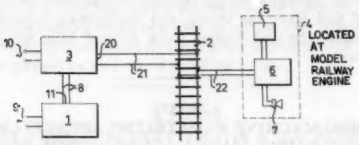
means within said doll for delaying operation of said moving means after operation of said controlling means.

4,266,368

DEVICE FOR GENERATING A SYNCHRONOUS SOUND REFERRING TO A MODEL RAILWAY ENGINE

Bo Nyman, Stockholm, Sweden, assignor to Alice Nyman, Stockholm, Sweden

Filed Aug. 7, 1979, Ser. No. 64,435
Int. Cl.³ A63H *33/26*
U.S. Cl. 46—232 **2 Claims**



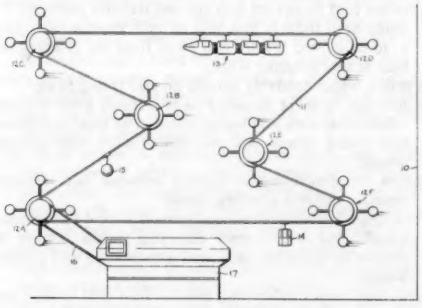
1. In combination with a model railway engine, a device for generating a synchronous sound imitative of a model railway engine, said device comprising a first unit having means including electronic circuits for generating sound signals adapted to imitate a certain engine and capable of emitting the generated sound signals via conductor means which also supply operating voltage to the engine, and a second unit located at the engine, which includes a loudspeaker, said second unit comprising a synchronization set capable of emitting pulses in time with the rotation of the engine wheel, which synchronization set is connected to said first unit via said conductor means and thereby capable of emitting the pulses to the first unit, said first unit being capable of emitting an a-c voltage corresponding to a sound pulse via said conductor means to teh loudspeaker when a pulse or a plurality of pulses are emitted from the synchronization set, characterized in that said synchronization set comprises a light-emitting diode, a phototransistor and marks made on the inside surface of the engine wheel, where the light-emitting diode and, respectively, the phototransistor are located to light said inside surface, and respectively, receive light reflected from the inside surface.

4,266,369

TOY CABLEWAY

Donald Spector, 380 Mountain Rd., Union City, N.J. 07087

Filed May 8, 1979, Ser. No. 37,047
Int. Cl.³ A63H *18/12*
U.S. Cl. 46—260 **9 Claims**



1. A detachable toy cableway system comprising:

A. a plurality of standards which are attachable to a vertical wall at selected sites thereon to create any one of several different travel patterns, each standard having a pedestal whose base is provided with adhesive to anchor the standard at a wall site selected therefor and a pulley wheel rotatably mounted at the end of a shaft projecting outwardly from the pedestal at right angles to the wall;

B. an endless cable of stretchable material strung over the pulley wheels to provide an expandable cable length which can be accommodated to any one of the different travel patterns, one of the wheels being driven to cause said cable to advance in a path determined by the selected travel pattern; and

C. play elements suspended from said cable at various points thereon.

4,266,370

AGRICULTURAL COVERING FILM OR SHEET AND METHOD FOR THERMAL INSULATION

Yoshiaki Kodera, Kusatsu; Kiyoyuki Watanabe, Jyoyo, and Takayuki Kusu, Minoo, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Japan

Division of Ser. No. 911,956, Jun. 1, 1978. This application Sep. 19, 1979, Ser. No. 76,948
Int. Cl.³ A01G *7/00*
U.S. Cl. 47—29 **5 Claims**

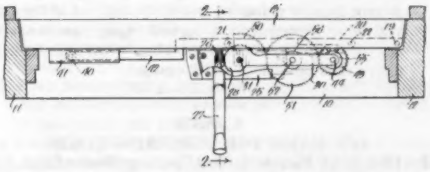
1. A method for maintaining an agricultural locus at temperatures suitable for the growth of plants, which comprises covering the locus with a covering film or sheet of a resin composition comprising (A) 100 parts by weight of a thermoplastic olefinic resin and (B) about 1 to about 20 parts by weight of an acetal resin.

4,266,371

OPERATOR FOR A CASEMENT-TYPE WINDOW

Arthur G. Erdman, Roseville, and Jeffory A. Peterson, Canby, both of Minn., assignors to Truth Incorporated, Owatonna, Minn.

Filed May 23, 1979, Ser. No. 41,722
Int. Cl.³ E05D *15/30*
U.S. Cl. 49—252 **9 Claims**



1. An operator for a casement-type window having a sash mounted adjacent one edge thereof for combined pivoting about a pivot axis and linear movement of the sash relative to a window frame comprising, a member movably engaged with said sash adjacent an outer edge thereof remote from said one edge for imparting opening and closing force to the sash, and means including a link pivotable about an axis generally parallel with said pivot axis for moving said member in a path which closely approximates the movement of the sash outer edge to cause said member to always act adjacent said outer edge.

4,266,372

SLIDING DOOR

Genshi Taniwaki, Kumamoto, Japan, assignor to Kongo Co., Ltd., Kumamoto, Japan

Continuation-in-part of Ser. No. 802,445, Jun. 1, 1977, Pat. No. 4,162,592. This application Feb. 21, 1979, Ser. No. 13,529
Claims priority, application Japan, Jun. 2, 1976, 51-71245; Jun. 2, 1976, 51-71246; Jun. 15, 1976, 51-77298
Int. Cl.³ E05F *11/00*
U.S. Cl. 49—358 **10 Claims**

1. A door adapted to be moved on a rail laid along a wall thereby to close an opening formed in the wall comprising:

a door body having a plurality of wheels and an axle for mounting each of said wheels on said body;

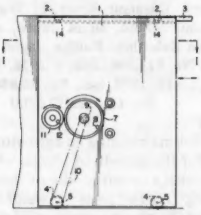
manually operable means rotatably attached to one side wall of the door, and including first and second rotatable shafts and a third partially rotatable shaft;

a rotary driving member of a predetermined diameter coaxially carried by the first shaft;

a rotary driven member carried by one of said axles and having a diameter larger than that of said driving member;

an endless power transmission member connected between said driving and driven members;

a locking means fixedly carried by said third partially rotatable shaft of said manually operable means, said third rotatable shaft being operatively coupled to said second rotatable shaft, said locking means locking said door body



in the closed position when said manually operable means are operated; and

stopper means having detecting means partially extending out of the side end of the door and positioned for detecting a wall contact, and engagement means for locking said second shaft of said manually operable means when said detecting means does not detect a wall contact wherein said stopper means comprises a toothed wheel coaxially mounted on said second rotatable shaft of said manually operable means, said detecting means comprising a projecting member extending out of the side end of the door, said detecting means actuating said engagement means for engagement with said toothed wheel when said detecting means does not detect a wall contact.

4,266,373

APPARATUS FOR DEBURRING EDGES

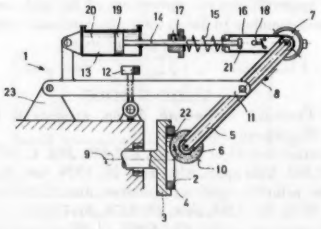
Horst Bornefeld, Burscheid; Gerd Comberg; Werner Engel, both of Leverkusen, and Johannes Neyer, Odenthal-Erberich, all of Fed. Rep. of Germany, assignors to Goetze AG, Burscheid, Fed. Rep. of Germany

Filed Oct. 24, 1979, Ser. No. 88,062

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1978, 2847192

Int. Cl.³ B24B *9/00*

U.S. Cl. 51—99 **17 Claims**



1. In an apparatus for deburring a circumferential edge of a workpiece, including a rotary deburring tool having an axis of rotation; the tool and the workpiece edge defining a location of contact during the deburring of the edge; the improvement wherein said axis is substantially parallel to the tangent belonging to the workpiece edge at said location; further comprising

(a) a tool lever having an end carrying said rotary deburring tool;

(b) means for pivotally supporting said tool lever and including a guide lever being articulated to said tool lever at a predetermined distance from said end thereof; said guide lever being pivotally supported at a location spaced from the articulation with said tool lever;

(c) a linear motor coupled to said tool lever for pivotally urging said tool lever toward the workpiece edge at a predetermined angle; and

(d) force-equalizing means coupled to said linear motor and said tool lever for setting and maintaining substantially constant the tool feeding force derived from said linear motor.

4,266,374

GRINDING MACHINE WITH TRUING APPARATUS FOR GRINDING WHEEL MADE OF CUBIC BORON NITRIDE

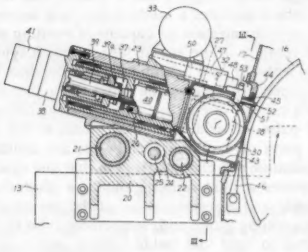
Hiroaki Asano; Ikuo Suzuki, both of Chiryu, and Minoru Enomoto, Ohbu, all of Japan, assignors to Toyoda-Koki Kabushiki-Kaisha, Kariya, Japan

Filed Apr. 13, 1979, Ser. No. 29,904

Claims priority, application Japan, Apr. 18, 1978, 53-45707

Int. Cl.³ B24B *49/18*

U.S. Cl. 51—165.87 **6 Claims**



1. A grinding machine comprising:

a bed;

work support means mounted on said bed for rotatably supporting a workpiece to be ground;

a wheel support slidably mounted on said bed for rotatably carrying a grinding wheel made of cubic boron nitride;

a traverse carriage slidable in a direction parallel to the axis of said grinding wheel;

traverse feed means for moving said traverse carriage;

a truing head slidably mounted on said traverse carriage so as to be moved toward and away from the grinding surface of said grinding wheel;

a truing wheel rotatably carried on said truing head;

a detection member mounted on said truing head in spaced relationship with said truing wheel in an axial direction of said truing wheel and movable toward said grinding wheel;

means for detecting the contact between said detection member and said grinding wheel;

feed means for feeding said truing head toward said grinding wheel until said contact detecting means detects the contact between said detection member and said grinding wheel;

said feed means being operable to feed said truing head toward and past said grinding wheel by a first predetermined distance for truing said grinding wheel in response to the detection of the contact between said detection member and said grinding wheel by said contact detecting means, said detection member being ground by said grinding wheel to a depth equal to the first predetermined distance;

said traverse feed means being operable to move said traverse carriage in one direction to perform a truing operation on said grinding wheel by said truing wheel after said truing head is fed toward said grinding wheel by the first predetermined distance;

means for moving said detection member a second predetermined distance toward said grinding wheel after said grinding wheel is trued by said truing wheel;

said traverse feed means being operable to move said traverse carriage in the other direction to cause said detection member to be ground by said trued grinding wheel so as to be aligned with said truing wheel relative to the periphery of said grinding wheel after said detection member is moved the second predetermined distance; and

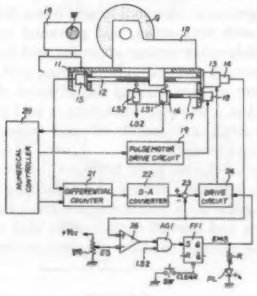
said feed means being operable to retract said truing head a third predetermined distance after said detection member is ground by said trued grinding wheel.

4,266,375

FEED CONTROL APPARATUS FOR A MACHINE TOOL CARRIAGE

Hideo Nishimura, Aichi; Yasufumi Tokura, Toyota; Kunihiko Unno, Kariya; Minoru Enomoto; Isamu Yokoe, both of Ohbu; Norihiko Shimizu, Nagoya, and Haruo Ohmura, Okazaki, all of Japan, assignors to Toyoda-Koki Kabushiki-Kaisha, Kariya, Japan

Filed Mar. 7, 1980, Ser. No. 128,154
Claims priority, application Japan, Mar. 28, 1979, 54-36394
Int. Cl.[3] B24B *49/00*
U.S. Cl. 51—165.71 **7 Claims**



1. A feed control apparatus for a carriage which is drivingly connected to a servomotor through a feed screw for slide movement on a guide base of a machine tool, comprising:

a numerical controller responsive to numerical control information for outputting feed pulses sselectively at a first frequency for rapid feed, a second frequency for slow-down feed and a third frequency for machining feed;

servomotor control means connected to said numerical controller and said servomotor for controlling rotation of said servomotor in response to said feed pulses output from said numerical controller;

detection means for detecting whether or not said carriage has reached a velocity checking point defined within a slow-down feed range of said carriage, so as to emit a velocity checking signal when the reaching of said carriage to said velocity checking point is detected;

abnormality confirmation circuit means capable of confirming whether or not the actual feed rate of said carriage has been reduced below a reference feed rate, which is lower by a predetermined value than a rapid feed rate, and responsive to said velocity checking signal for outputting an abnormality signal when it is confirmed that the actual feed rate of said carriage still exceeds said reference feed rate; and

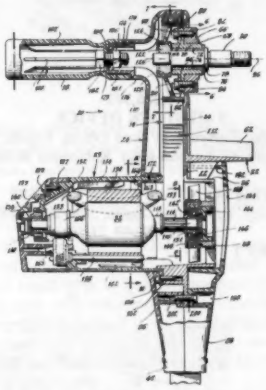
emergency stop circuit means connected to said servomotor control means and said abnormality confirmation circuit means and responsive to said abnormality signal for causing said servomotor control means to immediately discontinue rotation of said servomotor.

4,266,376

PORTABLE ELECTRICALLY ENERGIZED SURFACE FINISHING TOOL

Colin Overy, Brockville, Canada, assignor to Black & Decker Inc., Newark, Del.

Filed Feb. 9, 1979, Ser. No. 10,912
Int. Cl.[3] B24B *23/00*
U.S. Cl. 51—170 R **21 Claims**



1. An improved, portable, electrically energized surface finishing tool adapted to be hand held and supported by a user during operation and to be maneuvered by the user for advancing a rotating, peripherally acting surface finishing tool into engagement with a workpiece, comprising:

a. an elongated, portable, tool body having a length, distal first and second opposite ends, and first and second sides thereof;

b. a first hand-gripping, tool support handle positioned adjacent said first end of the tool for providing manual support of said tool at said first end;

c. a support spindle, adapted to receive a peripherally acting surface finishing tool, positioned adjacent said second opposite end of the tool;

d. said spindle having first and second opposite ends thereof;

e. said spindle rotatably supported near a first end thereof and having said second spindle end unsupported and protruding from a side of said tool whereby a hub of a peripheral acting surface finishing tool can be positioned on said spindle from said second end;

f. said first handle and spindle mutually orientated for providing that said handle is positioned rearwardly of said spindle on said body and said spindle extends horizontally and transversely to said tool body length when said support handle is positioned vertically;

g. a second hand-gripping tool support handle positioned adjacent said spindle at said second end of said body for providing manual support of said tool adjacent said second end;

h. a guard means positioned between said spindle and said first support handle, said guard means configured to inhibit projection of workpiece particles from said second relatively forward end of said tool body to said first relatively rearward end at which position a user is located;

i. said guard means configured for enabling a periphery of a rotating surface finishing tool to be advanced into engagement with a workpiece upon advancement of the tool in directions generally parallel to the length of the body;

j. electric motor means protruding transversely from said

second side of said tool body at a location rearwardly of said spindle and intermediate said spindle and first handle;

k. said motor means including an armature shaft having a longitudinal axis thereof extending transverse to the length of said tool body; and,

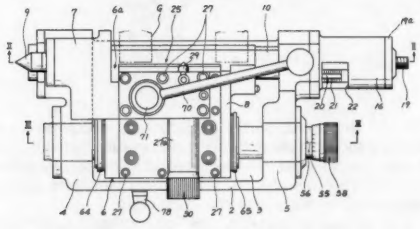
1 a flexible coupling means extending in the direction of the length of said tool body for coupling said armature shaft and said spindle for imparting rotary action to said spindle.

4,266,377

TAILSTOCK DEVICE

Makoto Kikuchi, Kariya, and Ikuo Ohtsu, Toyota, both of Japan, assignors to Toyoda-Koki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 21, 1979, Ser. No. 77,591
Claims priority, application Japan, Sep. 22, 1978, 53-116817
Int. Cl.[3] B24B *53/00*
U.S. Cl. 51—262 T **5 Claims**



1. A tailstock device for a grinding machine to grind a workpiece in a dead stop grinding mode comprising:

a tailstock base provided with support portions at opposite ends thereof;

a pilot shaft supported by said support portions;

a tailstock body supported on said pilot shaft between said support portions so as to be movable in a horizontal direction of the axis of said pilot shaft and to be rotatable about the axis of said pilot shaft;

a center carried by said tailstock body in parallel relationship with and upwardly of said pilot shaft for supporting one end of a workpiece to be ground by a grinding wheel;

a spring member for urging said tailstock body and said center toward said workpiece;

a dressing housing supported on said tailstock body at the rear of said center;

a dressing tool adjustably supported by said dressing housing to be movable in a horizontal direction perpendicular to the axis of said center for dressing said grinding wheel;

the tip of said dressing tool being in a horizontal plane which includes the axis of said center;

means for adjustably positioning said dressing tool so as to bring the tip of said dressing tool into a position corresponding to the finished surface of said workpiece;

said pilot shaft being formed with a notched portion thereon so as to permit the periphery of said grinding wheel to move into a position corresponding to the axis of said center in a dressing operation; and

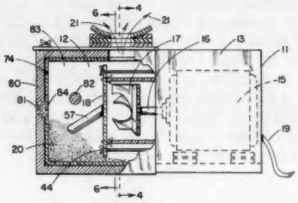
taper adjusting means for adjustably swinging said tailstock body about the axis of said pilot shaft to adjust the angular position of said center.

4,266,378

GLASS ETCHING DEVICE

J. Peter Johnson, 4002 E. 75th St., Indianapolis, Ind. 46250

Filed May 21, 1979, Ser. No. 41,010
Int. Cl.[3] B24C *1/04, 3/32*
U.S. Cl. 51—432 **7 Claims**



2. An apparatus for etching a curved outer surface of fixed contour of a container comprising:

an etching device including a frame with a closed abrasive particulate storage compartment with said frame having an outlet through which abrasive particulate from said compartment may pass;

first means mounted to said frame and located in said compartment being positioned to force abrasive particulate from said compartment through said outlet;

power means associated with said first means operable to power said first means;

a flexible grommet mounted to said frame defining a passage in line with said outlet, said grommet having a radially depressible outer surface assuming said fixed contour and conformingly and sealingly engaging said curved surface, said outer surface limiting the location of said container which is in a position other than in said passage to allow unobstructed movement of said abrasive particulate within said passage; and

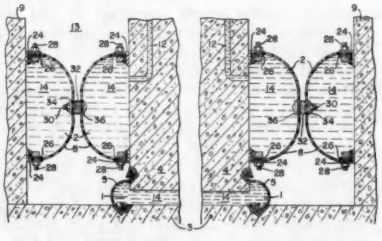
a plurality of masks, each having a differently configured opening extending therethrough defining a symbol to be etched, each mask positionable between and against said grommet and curved surface with said opening aligned with said passage to allow abrasive particulate to pass.

4,266,379

ASEISMIC SYSTEM FOR STRUCTURE FOUNDATION

Hector Valencia Aguilar, Cerro Gordo No. 44, Col. Campestre-Churubusco, Mexico 21, D.F., Mexico

Filed Mar. 6, 1979, Ser. No. 17,860
Int. Cl.[3] E04H *9/00*
U.S. Cl. 52—1 **7 Claims**



1. An aseismic system comprising in combination:

a. a structure foundation;

b. a lower slab beneath said foundation with retaining walls extending upwardly therefrom along opposite sides of said foundation to isolate said foundation from the ground;

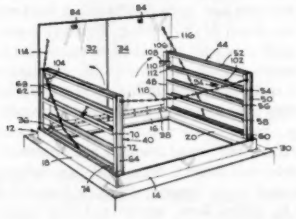
c. foundation fluid means disposed between said foundation and said lower slab;
d. lateral fluid means separate and distinct from said foundation fluid means disposed between said foundation and each of said retaining walls;
e. duct means for passage of fluid into and out of said foundation fluid means and said lateral fluid means;
f. first valve means for permitting fluid flow into said foundation fluid to effect leveling of said foundation;
g. second valve means for permitting fluid flow to and from said lateral fluid means thereby maintaining stability of said foundation with respect to the ground; and
h. means for sensing horizontal movement tending to compress said lateral fluid means and in response thereto activating said second valve means to inject additional fluid to said lateral fluid means and for sensing horizontal movement tending to dilate said lateral fluid means and in response thereto activating said second valve means to eject fluid from said lateral fluid means.

4,266,380

HIGH STRENGTH COVER FOR UNDERGROUND UTILITY BOX

Alfonso A. Samolis, Danville, Calif., assignor to Christy Concrete Products, Inc., Colma, Calif.

Filed Feb. 9, 1979, Ser. No. 10,513
Int. Cl.[2] E02D *29/14*
U.S. Cl. 52—19 **7 Claims**



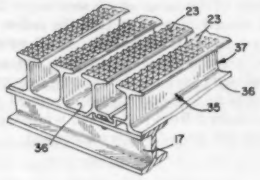
1. A high strength cover for an underground utility box adapted to be installed substantially flush with ground level comprising a substantially rectangular frame including mutually parallel end members defining first and second end edges and mutually parallel side members defining first and second side edges that are perpendicular to the end edges so as to define therewith a substantially rectangular access opening, first and second substantially congruent rectangular structural frameworks having a combined outlinear shape adapted to fit in said access opening, said structural frameworks being formed by elongate structural members having vertical dimensions adequate to resist bending of the frame in response to loads imposed thereon, first and second hinge means for joining the edges of respective frameworks to respective said end edges to afford hinged movement of said frames, first and second substantially congruent cover plates which in combination have an extent sufficient to cover said access opening, third and fourth hinge means for joining said cover plates to said first side edge for hinged movement on an axis perpendicular to the axes of movement of said frameworks, said plates in the lower position closing said access opening and being supported by said frameworks, and means for releasably engaging respective said plates to respective said frameworks when the same are pivoted upward so as to define an upstanding barrier on three sides of said rectangular opening.

4,266,381

EXTRUDED NONSKID TREADWAY

Robert J. Deller, Buffalo Grove, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed Dec. 3, 1979, Ser. No. 99,682
Int. Cl.[3] B44D *5/08;* **B32B** *3/30*
U.S. Cl. 52—177 **16 Claims**



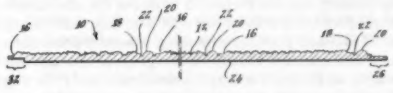
1. A treadway comprising a plurality of extruded panels supported on support means, each panel including an upper support surface, said panel comprising:
a plurality of upper horizontal and laterally spaced tread strips, said strips forming the entire upper surface of the panel,
vertically extending horizontally spaced support members connected to said tread strip for individual supporting of each said tread strip in a raised position relative to and standing upon said associated support means,
interlocking means on each panel adapted to interlock ends of said panels and adjoining said support means,
a plurality of nonskid members integrally formed in each of said tread strips, and
said nonskid members extending in contiguous and rectilinear relation.

4,266,382

HARDBOARD PANEL SIDING

Stephen J. Tellman, Patterson, N.Y., assignor to Champion International Corporation, Stamford, Conn.

Filed May 18, 1979, Ser. No. 40,177
Int. Cl.[3] E04D *1/00*
U.S. Cl. 52—316 **1 Claim**



1. An exterior grade hardboard siding panel for application to vertical surfaces to protect the surfaces from the weather and to provide the appearance of a multiplicity of vertically-applied solid lumber planks having a bead and cove detail, comprising a thin rectangular panel having:
(a) a front surface configured with a plurality of adjacent areas each simulating a vertical solid wood plank, wherein each area has a shallow cove recess at one edge and a like cove recess adjacent to a bead at the opposite edge, and said plurality of areas are arranged such that (i) the cove recess of one edge of one area and the cove recess adjacent to the bead of the next adjacent area have their recessed surfaces facing said bead of said next adjacent area, (ii) both said coves are separated from said bead by narrow grooves, and (iii) said bead extends upwardly from the base of said grooves to a crest which is approximately tangential to the outermost plane of the front surface;
(b) a substantially planar back surface;
(c) a first edge of reduced thickness forming the bottom lap of a shiplap joint the back surface of which is a continuation of said substantially planar back surface, and the front

surface of which is recessed to a level below the base of a groove which terminates the front surface configuration directly adjacent to the recessed area; and

(d) a second edge of reduced thickness opposite said first edge, forming the top lap of a shiplap joint, the back surface of which is recessed from said substantially planar back surface, and the front surface of which is a substantial continuation of the front surface configuration and terminates with a recessed cove, and wherein the radius of curvature of the cove which terminates the front surface of said second edge is less than the radius of curvature of the coves formed on the rest of said panel, and wherein the linear extent of all said coves, measured across the width of said panel, is substantially identical, whereby the strength of said second edge is improved, since less material is removed from said panel, while the appearance of the bead and cove detail is maintained.

4,266,383

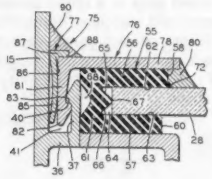
SOLAR ENERGY COLLECTOR

Wallace F. Krueger, Toledo, and Anthony R. Shaw, Waterville, both of Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Continuation-in-part of Ser. No. 892,110, Mar. 31, 1978. This application Mar. 5, 1979, Ser. No. 17,428

Int. Cl.[3] E06B *3/64*; F24J *3/02*

U.S. Cl. 52—400 **7 Claims**



1. A sealing member comprising: an elongated elastic body of generally U-shaped configuration in cross section and formed of resiliently yieldable material; said body having a side wall and a pair of walls in spaced, parallel relation formed integral with said side wall for slip fitted engagement over the marginal edge of a glazing panel; said spaced walls terminating in generally flat edges; one of said spaced walls having a sealing lip formed integral therewith adjacent the associated edge and extending toward the other wall; said side wall comprising a pair of inclined portions extending inwardly from the inner edges of said spaced walls in a converging relation and meeting at an apex to form a rib lengthwise of said body for engagement with the peripheral edge of said glazing panel to maintain said panel centered within said elastic body; said inclined portions defining a cavity behind said apex for accommodating displacement of said inclined portions upon rectilinear movement of said glazing panel within said elastic body.

4,266,384

FIRE RESISTANT CEILING FURRING SYSTEM

David L. Orals, Arlington Heights, and James D. Latfoon, Des Plaines, both of Ill., assignors to United States Gypsum Company, Chicago, Ill.

Filed Jun. 22, 1979, Ser. No. 51,314

Int. Cl.[3] E04B *1/76, 1/38*

U.S. Cl. 52—410 **30 Claims**

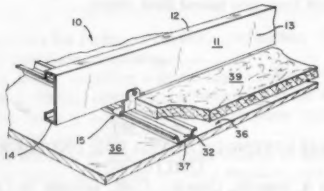
1. A fire resistant ceiling furring system comprising:

support joists in generally parallel alignment having a bottom surface and a side surface;

furring clips attaching furring channels to the joists, said clips having a flat body portion with upper joist engageable means fastened to said joists and lower furring channel engageable means engaging furring channels, said upper engageable means comprising at least one tab bottom extending from an upper edge of said body portion and said lower engageable means comprising a flange extending at generally righ angles from said body portion, said flange having end folds at opposite ends thereof, said end folds rebent under said flange to opposingly face and create opposing slots engaging flanges of a furring channel;

furring channels in generally parallel alignment at substantially ring angles to said joists thereby forming a generally grid-like configuration, said furring channels connected at grid intersection points to said joists by means of said furring clips wherein said furring channels have a lower attachment surface and upper sideward extending flanges engaged by the slots of said furring clips for supportive engagement and wherein at least one flange is screw-attached to the furring clip;

first resistant gypsum ceiling panels affixed to the lower



attachment surfaces of said furring channels by mechanical fastener means; and,

mineral fiber insulation provided for substantially the full expance of the ceiling and being disposed above, and supported by, said furring channels forming a continuous layer beneath said joists and having a thickness no greater than the depth of the furring clip body portion;

whereby upon exposure to heat from below the furring channels continue to support the mineral fiber insulation and remain engaged to said ceiling panels during heat distortion by means of said furring clips retaining the sideward extending flanges of the furring channels, wherein the fire resistant ceiling panels are held in place and retard cracking and contraction from said heat, whereby said mineral fiber insulation reduces heat transmission to said joists thereby retarding harmful distortion to said joists to inhibit flame spread and heat damage to upper building portions above said fire resistant ceiling furring system.

4,266,385

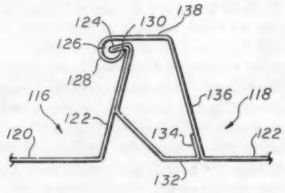
INTERLOCKING BUILDING PANEL CONSTRUCTION

James A. Oehlert, P.O. Box 5026, Longview, Tex. 75604

Filed Jun. 1, 1979, Ser. No. 44,580

Int. Cl.[3] E04D *3/361*

U.S. Cl. 52—521 **7 Claims**



1. An interlocking building panel construction comprising:

an intermediate panel portion;

first and second batten portions being defined at respective sides of said intermediate panel portion and adapted for

interlocking mating relation with the batten portions of adjacent building panels;

said first batten portion being formed to define a first batten channel side wall extending in transverse relation to said intermediate panel portion and an outer protective channel wall being in offset relation with said intermediate portion, said first batten portion further defining an elongated interlocking receptacle arcuately curved inwardly from said protective channel wall and having an upwardly facing edge shaped apart from the inside of said outer protective channel wall;

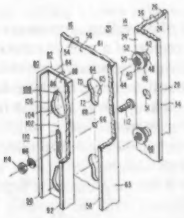
said second batten portion being formed to define a second batten channel side wall and an interlocking flange, said interlocking flange being formed back from said second batten side wall to form a corner therebetween, said interlocking flange being adapted to extend between said edge and said inside of said outer protector channel wall into said interlocking receptacle with said corner receiving said edge to form a substantial seal therewith, said second batten portion further defining a fastening wall being substantially coplanar with said intermediate panel portion.

4,266,386

PANEL JOINT FOR ASSEMBLING PANEL MEMBERS

Gurdip S. Bains, Bonneauville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 2. 1979, Ser. No. 80,973
Int. Cl.³ E04C *1/10*
U.S. Cl. 52—584 **7 Claims**



1. A panel joint, comprising:

first and second upstanding metallic panel members each having upper and lower edges, and first and second major opposed surfaces,

a plurality of spacer members having head and shank portions, with their shank portions being fixed to only said first panel member, in predetermined vertically spaced relation with one another on a selected portion of the first major surface thereof,

an elongated locking member slidably attached to the second major surface of said second panel member,

said locking member having a plurality of vertically spaced, vertically oriented elongated slots therein, having upper and lower ends, with its lower end having an enlarged spacer head receiving portion, and with a narrower, spacer shank receiving portion extending upwardly therefrom towards its upper end,

said second panel member having a plurality of vertically spaced, openings therein,

said slots and openings of said locking member and said second panel member, respectively, being disposed to define a plurality of cooperative pairs, with portions of the slot and opening of each pair being aligned as the locking member is operated between predetermined upper and lower travel limits,

said second panel member being disposed such that a selected portion of its first major surface butts against the selected portion of the first major surface of the first panel member on which said spacer members are fixed, with each of said spacer members extending through an opening defined by a cooperative pair,

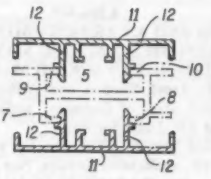
said first and second panel members having said selected portions of their first major surfaces forced tightly together when the locking member has been forced towards its lower travel limit to provide a joint between said first and second panel members in which said locking member is visible from only one side thereof; regardless of the relative orientation between said first and second panel members.

4,266,387

CONSTRUCTIONAL MEMBER FOR BUILDINGS

Jon Karlsson, Götalandsvägen 194, S-125 55 Älvsjö, Sweden

PCT No. PCT/SE78/00017, § 371 Date Mar. 19, 1979, § 102(e) Date Mar. 13, 1979, PCT Pub. No. WO79/00047, PCT Pub. Date Feb. 8, 1979.
This PCT application filed Mar. 13, 1979, Ser. No. 23,195
Claims priority, application Sweden, Jul. 19, 1977, 7708343
Int. Cl.³ E04B *2/62*; E06B *1/12*
U.S. Cl. 52—731 **6 Claims**



1. A constructional member for use with prefabricated building elements used in ceiling, wall, door, and window installations, comprising a base rail with a substantially U-shaped cross section having a web portion and two leg portions of resilient material, one of said leg portions being releasingly attached to one end of the web portion by means of resilient engagement between latching members arranged on these portions, wherein the base rail is provided with two supporting limbs opposingly directed in relation to the leg portions, the outer distance between the supporting limbs corresponding to the inner distance between the leg portions, so that the base rails can fit into each other, and in that the central part of the web portion is formed with two U-shaped attachment rails with a common web portion and opposingly directed shank pairs which together with the attachment web portion define similar channels, in which building members and/or clamping elements of the constructional member is insertable; including a fastening element associated with the constructional member and consisting of a clamping rail which is U-shaped in cross section and provided with a web portion and two shanks, the height of which from the outer surface of the web portion facing away from the shanks substantially corresponds to the height of the supporting limbs of the base web portion and that the web portion of the clamping rail is also formed with two gripping elements which are at the ends provided with hooks and intended for engagement with the shank ends of the attachment rails.

4,266,388

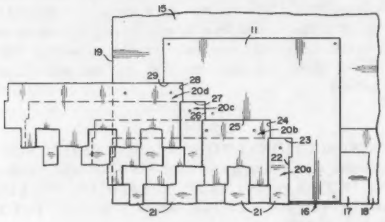
SHINGLING TEMPLATE AND METHOD

David N. Flood, Clearwater, Fla., assignor to The Celotex Corporation

Filed Sep. 7, 1979, Ser. No. 73,580
Int. Cl.³ E04D *3/32, 15/02*
U.S. Cl. 52—748 **21 Claims**

12. A method of installing an array of overlapping cover units in successive courses on a surface comprising the steps of placing on the surface a template which has a side edge contoured to match the recurring cover unit side edge pattern to be established within the array,

employing the contoured side edge of the template as a guide for positioning on the surface the first cover unit of



each of the successive courses in an orderly, overlapping aggregate, and

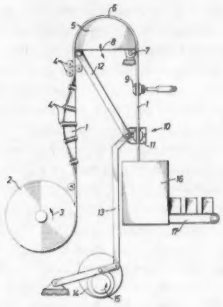
fastening each of the first cover units to the surface.

4,266,389

METHOD AND AN ARRANGEMENT FOR THE ADVANCING OF A PACKING MATERIAL WEB THROUGH A PACKING MACHINE

Björn H. Linde, Lund, Sweden, and Wilhelm Reil, Bensheim-Auerbach, Fed. Rep. of Germany, assignors to Tetra Pak International AB, Lund, Sweden

Filed Nov. 29, 1978, Ser. No. 964,623
Claims priority, application Sweden, Nov. 29, 1977, 7713491
Int. Cl.[3] B65B *41/12, 41/14*
U.S. Cl. 53—396 **10 Claims**



1. A method for advancing a packing material web in a packing machine comprising the steps of:

clamping the material web at a first location;

pivoting a curved surface about a fixed pivot against a first portion of the packing material web without sequential sliding between said web and said curved surface, said pivot being positioned substantially at one end of said surface, the first portion being rearward, in a machine direction, with respect to the first location, to advance the first portion of the packing material web;

clamping the material web at a second location, said second location being forward, in a machine direction, with respect to the first location;

releasing said material web at the first location;

pivoting said curved surface about said pivot away from the first portion, said web being under substantially less tension than during said first mentioned pivoting step and a substantial portion of said curved surface being out of the path of said web to substantially minimize frictional damage to the web caused by sliding contact between the web and the curved surface; and

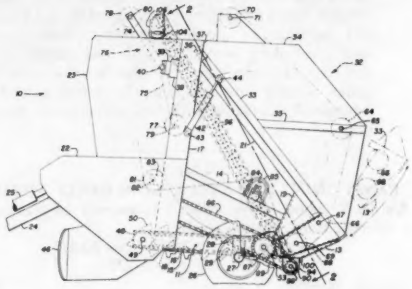
urging said clamped material web at the second location forward in a machine direction toward a package forming unit.

4,266,390

METHOD FOR COLLECTING AND RECYCLING CROP MATERIAL PARTICLES IN A ROLL FORMING MACHINE

Aquila D. Mast, Lancaster, Pa., assignor to Sperry Corporation, New Holland, Pa.

Division of Ser. No. 866,330, Jan. 3, 1978, Pat. No. 4,187,667.
This application Sep. 17, 1979, Ser. No. 75,922
Int. Cl.[3] A01D *39/00*
U.S. Cl. 56—1 **4 Claims**



1. The method of recycling crop material particles back into the roll forming region of a mobile crop roll forming machine during the roll forming process, comprising the steps of:

(a) towing the roll forming machine across a field of crop material to pick up crop material from the ground and form said crop material into a roll;

(b) collecting the particles of crop material lost from the roll during the roll forming process at a collection location within the roll forming machine before said lost particles come into contact with the ground;

(c) transporting the collected crop material particles from the collection location along a predetermined path; and

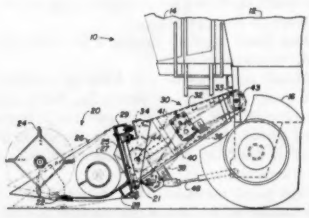
(d) depositing the transported crop material particles in the roll forming region for inclusion in the roll of crop material.

4,266,391

HEADER ATTACHMENT MECHANISM FOR COMBINES

James W. McDuffie; Larimer J. Knepper, and Larimer J. Knipper, all of New Holland, Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Nov. 5, 1979, Ser. No. 91,436
Int. Cl.[3] A01D *41/02*
U.S. Cl. 56—14.5 **40 Claims**



1. A feeder house extending from a mobile combine base unit for transferring crop material collected by a detachable header

to the base unit for further harvesting treatment, the header including a transversely disposed cutting means for severing crop material from the ground and a frame having a transverse main beam for detachably supporting the header from the feeder house, said feeder house comprising:

a frame;

an elongated forwardly extending body portions supported by said frame, said body portion having a forward end adjacent the header, a rearward end adjacent the base unit, a centerline extending between said forward and rearward ends such that said feeder house is substantially equally situated on either side of said centerline, two laterally spaced sidewalls extending between said forward and rearward ends substantially parallel to said centerline, and a passageway extending from said forward end to said rearward end between said sidewalls, said passageway terminating in a crop inlet opening at said forward end and in a crop outlet opening at said rearward end;

a crop conveying means housed within said passageway for transporting crop material rearwardly to the base unit, said crop conveying means including a transverse rotatable shaft member adjacent and substantially parallel to said forward end, said shaft member defining a transverse axis substantially perpendicular to said feeder house centerline, said transverse axis being rearward of said forward end;

a front face member selectively movably attached to said body portion for selective rotative movement in a fore-and-aft direction relative to said body portion, said front face member projecting forwardly for connection to the cradle assembly set forth below such that the angular relationship of the cutting means relative to the ground can be altered by rotatably moving said front face member in a fore-and-aft direction;

a cradle assembly having pivot means pivotably attaching said cradle assembly to said front face member, said cradle assembly having a crop passage opening therethrough substantially registered with said crop inlet opening, said cradle assembly including a header connecting means for attaching the header to said cradle assembly to prevent relative movement therebetween, a retaining means cooperable with said front face member to prevent relative fore-and-aft movement therebetween while allowing pivotal movement of said cradle assembly in a substantially vertical plane and a pivot control means cooperatively associated with said cradle assembly and said front face member for selectively controlling the extent of pivotal movement therebetween; and

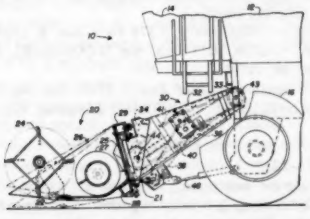
drive means for driving said crop conveying means.

4,266,392

HEADER CUTTING ANGLE ADJUSTMENT MECHANISM

Larimer J. Knepper; James W. McDuffie, and Robert A. Wagstaff, all of New Holland, Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Nov. 5, 1979, Ser. No. 91,446
Int. Cl.[3] A01D *41/02*
U.S. Cl. 56—14.5 **22 Claims**



1. A feeder house extending from a mobile combine base unit for transferring harvested crop material collected by a detachable header to said base unit for further harvesting treatment, said header including a transversely disposed cutting means for severing crop material from the ground, said feeder house comprising:

a frame;

an elongated forwardly extending body portion supported by said frame, said body portion having a forward end adjacent the header, a rearward end adjacent the base unit, and a passageway therethrough between said forward and rearward ends;

a crop conveying means housed within said passageway for transporting said crop material rearwardly to the base unit, said crop conveying means including a transverse rotatable shaft member adjacent and substantially parallel to said forward end, said shaft member defining a transverse axis substantially perpendicular to the line of travel of said combine, said transverse axis being rearward of the header; and

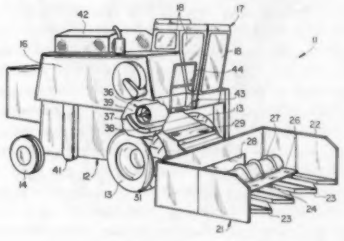
a front face member selectively movably attached to said body portion for selective rotative movement in a fore-and-aft direction relative to said body portion, said front face member projecting forwardly for connection to the header such that the header is movable with said front face member, said front face member including stabilizing means for selectively restricting and controlling said movement about said transverse axis, whereby the angle of cut of the header cutting means relative to the ground can be selectively varied according to the extent of fore-and-aft rotative movement of said front face member relative to said forward end.

4,266,393

SESAME SEED HARVESTER

Clyde L. Taylor, 1545 Chinoworth St., Visalia, Calif. 93277

Continuation of Ser. No. 907,760, May 19, 1978, abandoned.
This application Dec. 7, 1979, Ser. No. 101,553
Int. Cl.[3] A01F *11/00*
U.S. Cl. 56—14.6 **10 Claims**



1. In an apparatus for harvesting sesame seed from sesame stalks having pods thereon, a framework, a cylinder structure rotatably mounted in the framework, means for rotating said cylinder structure about an axis of rotation, a concave structure mounted in a fixed position in said framework and generally underlying said cylinder structure to form an entrance area, a separating area and an exit area in cooperation with the cylinder structure, means carried by the framework for delivering sesame stalks with pods thereon, sesame seed pods and sesame seeds to said entrance area so that they are introduced between the cylinder structure and the concave structure in a direction substantially at right angles to the direction of rotation of the cylinder structure and thereafter pass through the separating area with the stalk and pod fragments being discharged through the exit area and also in a direction substantially at right angles to the direction of rotation of the cylinder structure, the concave structure being formed in such a manner so that at least some of the sesame seeds which are separated from the pods can drop through the concave structure, means

for moving the stalk and pod fragments from the exit area and means for collecting sesame seeds as sesame seeds are separated from the pod and stalk fragments as they are advanced through the separating area and from the exit area, said cylinder structure and said concave structure each having a plurality of spaced apart rows of spaced apart blades having knife-like leading edges for slicing open said pods so that sesame seeds may be readily separated from the pods, the rows of spaced apart blades on one of said structures being inclined at an angle with respect to the axis of rotation of the cylinder structure so that the cutting action of said blades will be progressive, said cylinder structure comprising a member having a continuous cylindrical surface and wherein said blades of said cylinder structure are secured in spaced apart rows on said cylindrical surface.

4,266,394

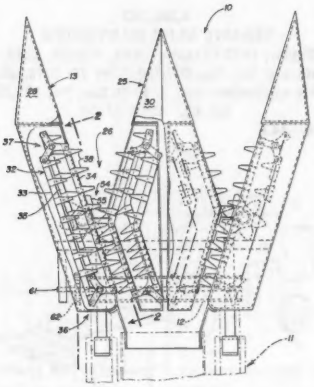
GATHERING MEANS MOUNTING ASSEMBLY FOR ROW CROP HARVESTERS

Robert M. VanGinhoven, Lancaster, and Carl D. Brown, Hershey, both of Pa., assignors to Sperry Corporation, New Holland, Pa.

Continuation of Ser. No. 943,411, Sep. 18, 1978, abandoned. This application Jul. 28, 1980, Ser. No. 172,690

Int. Cl.³ A01D *45/00*

U.S. Cl. 56—94 **1 Claim**



1. A row crop attachment for a mobile forage harvester unit adapted to advance over a field of crop planted in rows, said attachment comprising in combination:

a pair of dividers being of a construction sufficient for forming a narrowing crop passageway;

a first and a second rotatable element connected to each divider, the first and second rotatable elements of one divider being interconnected by a plurality of one-piece substantially linear bars in stacked relationship, the first and second rotatable elements of the other of the dividers being interconnected by a plurality of one-piece, substantially curvilinear bars in stacked relationship, said linear and curvilinear bars being of a construction sufficient for movement with said rotating elements adjacent said narrowing crop passageway· and

means for moving crop material through said narrowing passageway, said means being a plurality of crop engaging elements connected to each of said bars and extending into said narrowing passageway for intermeshing in timed relationship.

4,266,395

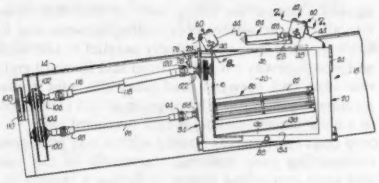
APPARATUS TO PERMIT AND CONTROL TILTING OF THE HEADER PORTION OF A COMBINE RELATIVE TO THE THROAT PORTION THEREOF ABOUT THE AXIS OF FORWARD TRAVEL OF THE COMBINE

Carl G. Basham, Cowgill, Mo., assignor to Thomas W. Basham, Excelsior Springs, Mo., a part interest

Filed Jul. 9, 1979, Ser. No. 55,602

Int. Cl.³ A01D *75/28*

U.S. Cl. 56—209 **13 Claims**



1. In a harvesting machine having a receiving portion adapted for advancement along a certain path of travel across a field, a header portion spaced forwardly from said receiving portion and adapted for severing crop materials from the field during said advancement and collecting said severed materials, and a throat spanning the distance between said portions to provide a conduit through which the severed crop materials may be transferred from the header portion to said receiving portion, the improvement comprising:

a lower pivotal coupling between said throat and the header portion adapting the latter for lateral rocking movement about a generally fore-and-aft axis relative to said path of travel and located adjacent a normally lower section of said throat; and

selectively operable power means between said throat and said header portion for effecting said rocking movement to the extent and in the direction necessary to permit accommodation of variations in ground contour between one lateral end of said header portion and the opposite lateral end thereof,

said throat and said header portion being provided with an adapter assembly therebetween providing said coupling and said power means, said assembly including means releasably attaching the same to said throat and means releasably attaching the same to said header portion,

said assembly including a pair of tubular components adapted for substantially axially aligned registration with one another so as to define a crop material passage therethrough, one of said components remaining with said throat during rocking of the header portion and the other of said components moving with said header portion during said rocking, said coupling including a pivot interconnecting said components.

4,266,396

IMPROVEMENTS IN AND RELATING TO ROPES

Ian M. Thomson, Wokingham, England, assignor to Cable Belt, Ltd., Edinburgh, Scotland

PCT No. PCT/GB78/00019, § 371 Date Jun. 5, 1979, § 102(e) Date Jun. 1, 1979, PCT Pub. No. WO79/00182, PCT Pub. Date Apr. 19, 1979.

This PCT application filed Jun. 1, 1979, Ser. No. 103,945

Claims priority, application United Kingdom, Oct. 5, 1977, 41301/77

Int. Cl.³ D07B *1/16*

U.S. Cl. 57—221 **2 Claims**

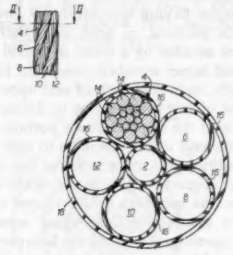
1. A wire rope, comprising

a plurality of strands twisted together, each strand comprising a plurality of wires twisted together,

the direction of twist of at least the outer wires in at least some of the strands being opposite to the direction of twist

of at least the outer wires in the strands adjacent thereto an outer sheath of rubber or rubber substitute covering all the strands together, and

a strand sheath of rubber or rubber substitute covering each strand individually,



whereby adjacent wires of adjacent strands extend substantially parallel to one another with respective strand sheaths therebetween to reduce stress between the wires.

4,266,397

METHOD AND APPARATUS FOR RESTARTING INDIVIDUAL WINDING UNITS OF A RING SPINNING OR TWISTING FRAME

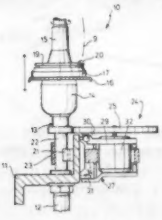
Atilla Dönmez, and Wolfgang Igel, both of Ebersbach, Fed. Rep. of Germany, assignors to Zinser Textilmaschinen, Ebersbach, Fed. Rep. of Germany

Continuation of Ser. No. 729,009, Oct. 4, 1976, abandoned. This application Jun. 29, 1978, Ser. No. 929,041

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1975, 2544319

Int. Cl.³ D01H *15/00, 7/56, 7/58, 1/24*

U.S. Cl. 57—261 **12 Claims**



1. Apparatus for restarting, following a thread break, an individual winding unit of a running ring spinning or twisting machine of the type having a plurality of driven spindles, each surrounded by a rotatable ring supporting a traveler for free rotation thereon, comprising:

spindle drive means positionable into engagement with any preselected spindle for driving said spindle in its normal rotational thread winding direction independently of the normal drive means of the machine; and

means for activating said drive means to drive said spindle at speeds up to the normal operating speed of the normal drive means of the machine until the relative rpm between the traveler and the ring can no longer exceed a predetermined limit.

4,266,398

METHOD AND APPARATUS FOR THE LAYERWISE SZ TWISTING OF ELEMENTS OF ELECTRICAL OR OPTICAL CABLES

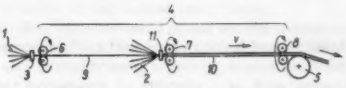
Dieter Vogelsberg, Coburg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 18, 1979, Ser. No. 49,288

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1978, 2828959

Int. Cl.³ H01B *13/04;* **D07B** *3/00*

U.S. Cl. 57—293 **7 Claims**



1. In a method for the continuous SZ twisting of twisting elements of electrical or optical cables and lines to form a stranded group, in which the twisting elements are twisted together a first time in three steps following each other in the same operation; are conducted subsequently as a stranded group in a twisted, taut condition temporarily through open air or by means of special guide elements and are thereupon twisted together a second time; in which furthermore, one or more of the process parameters causing the twisting are periodically changed in steps at intervals which are an uneven part of the time interval between the first and the second twisting of a longitudinal section of the twisting elements of the stranded group; and the superposition of the first and the second twisting leads to a resultant twist with a twist direction which changes from section to section, a method for also obtaining multi-layer twisting of twisting elements to form standed layers on the stranded group comprising: placing the twisting elements of each stranded layer to be placed on the stranded group thereon after the first, but still before the second, twisting of the twisting elements of the stranded group; twisting the twisting elements of said stranded layer a first time; later twisting said twisting elements of said stranded layer a second time together with the twisting elements of the stranded group; changing one or more of the process parameters causing the twist in m even, at least four, successive steps increasing and decreasing uniformly and periodically; and selecting the spacings in time between the first and second twisting of a longitudinal section of the twisting elements of the stranded group or a stranded layer to be different from stranded group to twisting layer or from twisting layer to twisting layer by an amount that is larger or smaller by one step duration than an arbitrary multiple of the period.

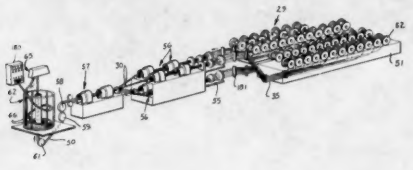
2. In apparatus for the multi-layer SZ twisting of twisting elements of electrical or optical cables and lines including stationary supplies for twisting elements; an SZ twisting device with a first and a second twisting point; at least one rotating twisting head associated with the second twisting point, said twisting head gripping the material to be stranded tensionally from the outside; and a pulling-off and windup device, the improvement comprising: a further twisting closer for placing a stranded layer on a stranded group which is formed between the first and second twisting points and a rotating twisting head immediately following said twisting closer, a twisting closer and twisting head being provided for each stranded layer to be placed on the stranded group, said twisting closer and twisting head, disposed between the first and second twisting points.

4,266,399

METHODS OF AND APPARATUS FOR MAKING CABLE

Benjamin C. Ellis, Jr., Snellville, Ga., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Aug. 2, 1979, Ser. No. 63,009
Int. Cl.[3] H01B *13/04*
U.S. Cl. 57—293 20 Claims



1. A method of making cable, said method comprising the steps of:

advancing each of a plurality of conductors through an associated guide of a plurality of spaced guides which are arranged about a common axis;

reciprocally rotating said guides about said common axis:

gathering said conductors together into a unit;

moving the unit to a distribution plane above a stationary takeup container;

directing successive increments of the unit downwardly into the container and causing the unit to be deposited in a predetermined pattern within the container; while

maintaining a substantially constant speed at which the unit is moved.

11. An apparatus for making cable, said apparatus comprising:

a plurality of spaced guides which are arranged in a predetermined pattern about a common axis;

means for advancing each of a plurality of conductors through an associated one of the guides;

a stationary container;

means for reciprocally rotating said plurality of guides about said common axis;

means for gathering the conductors together into a unit;

means for moving the unit to a distribution plane above the stationary takeup container;

means for directing successive increments of the unit downwardly into the container and for causing the downwardly moving unit to be deposited in a predetermined pattern within the container; and

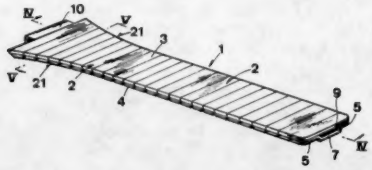
means for causing the speed at which the unit is moved to be maintained substantially constant.

4,266,400

WRIST WATCH BAND AND MANUFACTURING METHOD THEREFOR

Kazutaka Tabata, Tokyo, Japan, assignor to The Bambi Incorporated, Tokyo, Japan

Filed Jul. 5, 1979, Ser. No. 54,855
Int. Cl.[3] B21L *5/02*
U.S. Cl. 59—35 R 8 Claims



1. A method of manufacturing a wrist watch band having a plurality of links respectively connected by at least one flexible connecting member, comprising the steps of:

forming from a first metal blank a series of upper members, each of said upper members comprising a plurality of upper strips;

forming from a second metal blank a series of lower members, each of said lower members comprising a plurality of lower strips having stepped-down intermediate portions with side portions on both sides thereof and separated from one another by a series of lateral slits;

placing said upper members over said lower members, respectively, such that each of said upper strips is centered over one of said lower strips to define an opening corresponding to the stepped-down portion of the lower strip, and fixing said upper members to said lower members in that condition to form a series of link members with said openings aligned longitudinally of the series;

cutting the link members to the desired band lengths;

inserting a continuous connecting member through the aligned openings and fixing the link members at both ends of the band lengths to the connecting member;

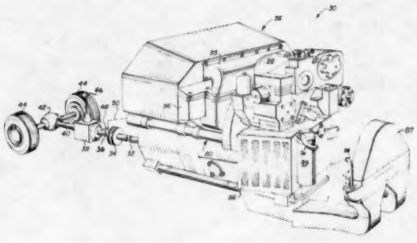
cutting the side portions of the band lengths into designated band shapes and cutting the continuous connecting member at appropriate locations to separate respective watch bands.

4,266,401

GAS TURBINE ENGINE FUEL CONTROL

Robert B. Sumegi; Geoffrey D. Woodhouse, both of Phoenix; George B. Mattson, Scottsdale; Harvey B. Jansen, Tempe; Frederic E. Bolliger, Phoenix, all of Ariz., and Robert A. Hatch, Boca Raton, Fla., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Dec. 22, 1977, Ser. No. 863,205
Int. Cl.[3] F02C *9/04*
U.S. Cl. 60—39.16 R 9 Claims



1. A free turbine type gas turbine engine comprising:

a gas generator section having a drive shaft and an air inlet;

means for delivering fuel flow to said gas generator section to maintain a combustion process therein and produce a motive output flow therefrom;

a power turbine section driven by said output gas flow from said gas generator section and having a power output drive shaft;

means for sensing the speeds of said gas generator and power output drive shafts;

means for adjusting the incidence of said motive gas flow onto said power turbine section to alter the power transmitted to said drive shaft of the power turbine section; and

control means for controlling fuel flow to said gas generator section in relation to the sensed speed of said gas generator section, and for controlling said adjusting means in relation to the sensed speed of said power turbine shaft, said control means including a manual input fuel lever coupled with said adjusting means for selecting a desired power turbine shaft speed, said control means operable to control said adjusting means to alter power transmitted to the power turbine section to tend to maintain power turbine

shaft speed at a level indicative of the position of said fuel lever.

4,266,402

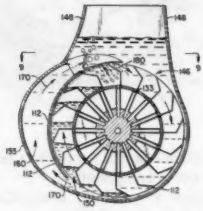
RECIRCULATING SUBMERSIBLE TURBINE

Robert L. Pruett, Rte. 2, Box 69, Gardnerville, Nev. 89410

Continuation-in-part of Ser. No. 857,635, Dec. 5, 1977, Pat. No. 4,170,114. This application May 14, 1979, Ser. No. 38,602

Int. Cl.³ F03B *13/10*

U.S. Cl. 60—496 **7 Claims**



1. In a turbine having a wheel with a plurality of chambers on its periphery, the wheel being submerged in liquid, wherein gas trapped in chambers on one side of the wheel provides buoyant lift to those chambers causing the wheel to rotate, the improvement comprising:

means defining a plurality of radial conduits corresponding to said plurality of chambers, each said radial conduit being communicated to a radially innermost portion of a corresponding chamber;

means for sequentially communicating a source of pressurized gas to said conduits when the chamber corresponding to each of said conduits is disposed within a predetermined angular portion of the rotation of said wheel.

4,266,403

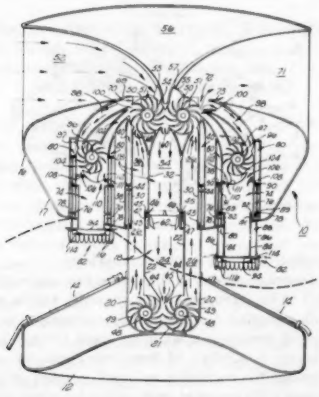
WIND AND WAVE ENERGY GENERATOR

Farrokh Hirbod, 6424 Via Colinita, Rancho Palos Verdes, Calif. 90274

Filed Oct. 30, 1979, Ser. No. 89,679

Int. Cl.³ F03B *13/12*; **F03D** *9/00*

U.S. Cl. 60—698 **6 Claims**



1. An apparatus for harnessing both wind and wave energy comprising:

a first housing having a first internal cavity having a lower end and with at least one turbine rotatably mounted in said lower end;

a buoyant second housing slidably mounted on said first housing and having a second internal cavity in fluid communication with said first internal cavity, said second internal cavity having an upper end;

at least one turbine rotatably mounted in said upper end;

an inlet passage in said second housing which gathers wind driven air flow and directs it onto said at least one turbine in said upper end;

said first and second cavities each being divided respectively, into an outer and inner chamber in fluid communication with the inner chamber in said first inner cavity being in fluid communication with the inner chamber of said second inner cavity and the outer chamber of said first inner cavity being in fluid communication with the outer chamber in said second inner cavity;

a one-way flow valve mounted in said second internal cavity so as to prevent air flow between said inner chambers when said second housing is moving downwardly toward said first housing.

4,266,404

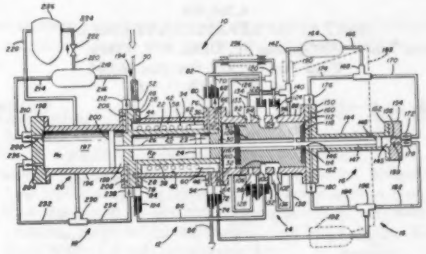
METHOD AND APPARATUS FOR CONSERVING WASTE ENERGY

Ahmed A. ElDifrawi, Westmont, Ill., assignor to Letcher T. White, Manchester, Ky.

Filed Aug. 6, 1979, Ser. No. 63,691

Int. Cl.³ F25B *7/00, 27/02*

U.S. Cl. 62—79 **29 Claims**



18. A method for converting waste heat from an internal combustion engine into useful energy comprising,

conveying a carrier liquid heated by waste heat from an internal combustion engine,

transferring heat from the heated carrier liquid to a refrigerant,

heating the refrigerant with the heat energy extracted from the heated carrier liquid to the temperature of vaporization of the refrigerant,

pressurizing the refrigerant by heating the refrigerant,

conveying the pressurized refrigerant to one side of a power piston-cylinder means to move the power piston-cylinder means in a first direction and to the opposite side of the power piston-cylinder means to move the power piston-cylinder means in an opposite direction,

alternately admitting the pressurized refrigerant in timed sequence to the opposite sides of the power piston-cylinder means,

alternately releasing the pressurized refrigerant in opposite timed sequence from the power piston-cylinder means on the side thereof opposite that side admitting the pressurized refrigerant,

condensing the vaporized refrigerant to form liquid refrigerant,

conveying the liquid refrigerant through an expansion valve and thereby decreasing the pressure of the liquid refrigerant, and

evaporating the liquid refrigerant to produce a reduction in the temperature thereof.

27. Apparatus for converting waste heat from an internal combustion engine into useful energy comprising:

means for conveying a carrier liquid heated by waste heat from an internal combustion engine,

heat exchanger means for transferring heat from the heated carrier liquid to a refrigerant,

said heat exchanger means being operable to pressurize the refrigerant by heating the refrigerant with the heat energy extracted from the heated carrier liquid to the temperature of vaporization of the refrigerant,

said heat exchanger means includes a pair of generators,

said geneators each including coil means for conveying therethrough either said heated carrier liquid or a cooling fluid and a chamber surrounding said coil means,

said chamber having an inlet and and outlet for conveying the refrigerant therethrough,

means for performing work with the pressurized refrigerant,

condenser means for receiving the vaporized refrigerant under pressure, said condenser means being operable to condense the vaporized refrigerant to form liquid refrigerant,

expansion means for drawing the liquid refrigerant from said condenser means, said expansion means being operable to subject the liquid refrigerant to a decreased pressure, and

evaporation means associated with said expansion means for subjecting the liquid refrigerant to an evaporation process so that the liquid refrigerant evaporates in said evaporation means thereby reducing the temperature in said evaporation means.

4,266,405

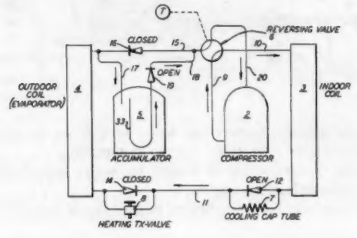
HEAT PUMP REFRIGERANT CIRCUIT

Allen Trask, 288 Genesee St., Utica, N.Y. 13502

Filed Jun. 6, 1979, Ser. No. 46,006

Int. Cl.³ F25B *13/00*

U.S. Cl. 62—160 **9 Claims**



1. An air-to-air heat pump for operation in both heating and cooling cycles comprising:

(a) indoor and outdoor air coils connected by a first line for flow of refrigerant therebetween;

(b) first valve means for controlling the direction of flow through said first line from said indoor to said outdoor coil during heating cycles and from said outdoor to said indoor coil during cooling cycles;

(c) a refrigerant compressor;

(d) a trap-type accumulator for preventing flow of liquid refrigerant and oil into said compressor during heating cycles;

(e) a selectively adjustable, indoor thermostat; and

(f) second valve means operable in response to said thermostat to connect said outdoor coil through a second line to said accumulator and thence to said compressor and said indoor coil during heating cycles, and to connect said indoor coil for refreigerant flow to said compressor and thence through a third line directly to said outdoor coil, bypassing said accumulator, during cooling cycles.

4,266,406

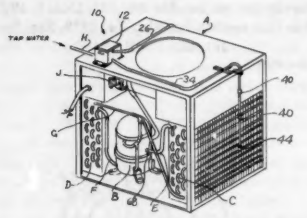
COOLING SYSTEM FOR CONDENSER COILS

Frank Ellis, 3104 Colbert St., Sheffield, Ala. 35660

Filed Jan. 22, 1980, Ser. No. 114,406

Int. Cl.³ F25B *39/04*

U.S. Cl. 62—183 **22 Claims**



1. A cooling system adapted for cooling refrigerant circulating in condenser coils, comprising:

fluid valve means adapted for controlling the flow of a cooling fluid therethrough;

means for sensing temperature differentials in the condenser coils refrigerant, and sensing means further adapted to activate said fluid valve means upon sensing a predetermined increase in the refrigerant temperature and deactivate said fluid means upon sensing a predetermined decrease in the refrigerant temperature;

means adapted to receive a flow of the cooling fluid upon activation of said fluid valve means, said receiving means further adapted to introduce condensate into the flow of said cooling fluid so that said condensate mixes with said cooling fluid; and

spray means for receiving the mixture of cooling fluid and condensate and adapted for spraying said mixture over the outside surfaces of said condenser coils to thereby lower the temperature of refrigerant flowing therethrough.

4,266,407

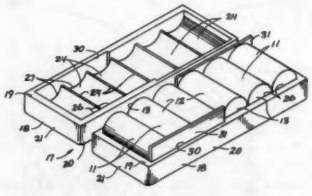
PORTABLE COOLER

David E. Gibson, 3400 W. 1st Pl. Apt. 17, Kennewick, Wash. 99336

Filed Jan. 22, 1980, Ser. No. 114,291

Int. Cl.³ F25D *3/08, 3/10*

U.S. Cl. 62—371 **10 Claims**



1. A portable beverage cooler, comprising:

a molded storage container formed in two separable halves adapted to be arranged facing inwardly and in abutment with one another for selectively encasing a prescribed number of beverage containers, each storage container half having a number of beverage container receiving indentations for receiving an equal number of beverage containers with opposite ends of the beverage containers located along parallel planes and with adjacent beverage containers physically contacting one another;

said molded storage container being formed of a lightweight heat insulative material;

a recess formed in at least one of the storage container halves adjoining and in open communication with one end of the indentations therein; and

cold pack means removably received within the recess and selectively removable to be frozen, then subsequently reinserted within the recess to physically engage beverage containers within the indentations for cooling the contents of the beverage containers by conduction.

4,266,408

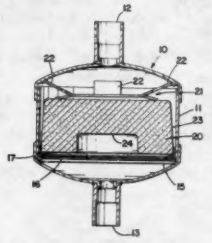
FILTER BLOCK AND METHOD OF MAKING THE SAME

Walter O. Krause, Newark, N.Y., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Division of Ser. No. 962,532, Nov. 20, 1978, Pat. No. 4,220,553, which is a division of Ser. No. 864,560, Dec. 27, 1977, Pat. No. 4,144,171. This application Dec. 4, 1979, Ser. No. 100,312

Int. Cl.³ F25B *43/00*

U.S. Cl. 62—474 **2 Claims**



1. In a refrigeration system that includes a closed circuit for the refrigerant fluid, a filter-drier unit having a porous block comprising particles of an adsorbed bound together by a copolymer formed from phenolic resin and a polyurethane resin, the ratio of the weight of the initial phenolic resin component to the weight of the finished block and the ratio of the weight of the initial polyurethane resin component to the weight of the finished block being selected so that the pressure drop of air at room temperature flowing through a one square inch section of ⅜ inch thickness of said finished block at 400 cubic feet per hour has a pressure drop of no greater than about 4 inches of water.

4,266,409

ENERGY-ABSORBING TORQUE TRANSMITTER

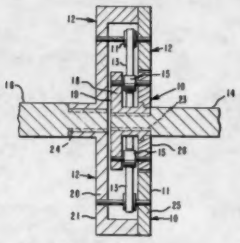
Howard J. Kutsch, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

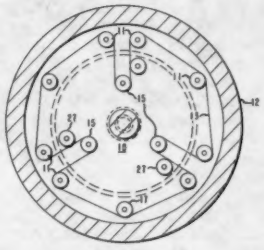
Filed Feb. 16, 1979, Ser. No. 13,193

Int. Cl.³ F16D *3/58*

U.S. Cl. 64—12 **11 Claims**

1. In an energy-absorbing torque transmitter comprising a hub member and a rim member, one of which is connected to an output shaft, the other to an input shaft, the hub member having hub means mounted thereon, the rim member of larger diameter having rim means mounted thereon, said hub and rim members being operably connected by at least one belt, the improvement wherein the hub means and rim means are rollers and the number of rim rollers is at least twice the number of hub rollers that are circumferentially arranged around the common axis of hub and rim members and the belt is a composite belt of two copolyetherester elastomers having different melting points trained over hub and rim rollers, the higher melting point copolyetherester elastomer is in the form of strands, tapes or films which are monoaxially oriented in the direction of their length, and the lower melting point copolyetherester elastomer is bonded thereto in an unoriented form as a matrix surrounding the individual strands, tapes or film of oriented copolyetherester elastomer, said belt capable of being stretched by up to about 60% of its original length upon application of force to either shaft to permit relative rotation of said





hub member with respect to said rim member so that torque is transferred from one shaft to the other through said belt.

4,266,410

METHOD AND WARP KNITTING MACHINE FOR THE MANUFACTURE OF A LOOPED PILE WARP KNIT FABRIC HAVING A PILE PATTERN

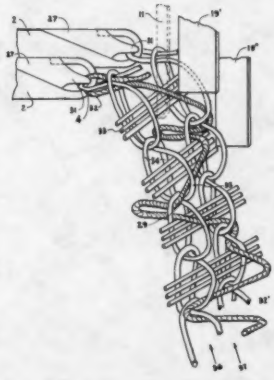
Manfred Schneider, Karl Marx Stadt; Gottfried Kahmann, Auerswalde; Wolfgang Göhler, and Andreas Kircheiss, both of Karl Marx Stadt, all of German Democratic Rep., assignors to Textima, VEB Wirkmaschinenbau-Karl-Marx Stadt, Karl Marx Stadt, German Democratic Rep.

Filed Oct. 15, 1979, Ser. No. 84,795

Claims priority, application German Democratic Rep., Oct. 20, 1978, 208575

Int. Cl.³ D04B *23/06*

U.S. Cl. 66—84 R **6 Claims**



1. A method of producing a looped pile fabric exhibiting a

pile pattern using a warp knitting machine, the warp knitting machine comprising

a row of extendable and retractable knitting needles;

a warp thread laying bar operative for feeding warp threads to the needles for the formation of chain stitches;

weft thread guides operative for laying inlay threads;

at least one row of pile thread guides for feeding pile threads to the needles, and

a row of pile loop supports, each pile loop support being located in a respective interneedle gap,

the method comprising

using the row of pile thread guides to feed a pile thread to each needle during the formation of each course of the fabric,

clamping each pile thread to the respective needle during the formation of each course of the fabric,

using a row of pile-thread reserve-forming elements to form a reserve length of pile thread in the pile thread clamped to each needle,

selecting pile threads and maintaining the selected pile threads clamped to their respective needles as the respective needles perform a castoff of their old chain stitches, by releasing the reserve lengths of the selected pile threads prior to castoff of the old chain stitches, so that during castoff of the old chain stitches the reserve lengths of the selected and still clamped pile threads can be pulled by their respective needles through the old chain stitches on these needles and thus be pulled through to the first side of the fabric,

and not releasing the reserve lengths of the non-selected pile threads, so that upon retraction of the needles the non-selected pile threads, due to the non-release of their reserve lengths, pull free of the clamping action, cease to be clamped and as a result remain on the second side of the fabric in the form of pile loops.

4,266,411

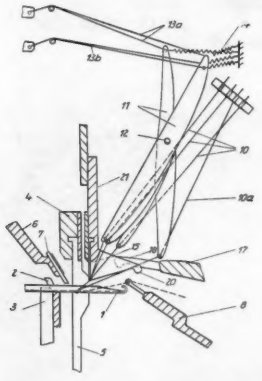
METHOD AND MACHINE FOR FORMING PLUSH-LOOP WARP KNIT FABRIC

Heinz Lindner; Fritz Stopp, both of Geyer; Wolfgang Georgie, Tannenberg; Werner Oehm, Geyer; Lisbet Müller, Tannenberg, and Brigitte Graubner, Geyer, all of German Democratic Rep., assignors to Veb Wirkmaschinenbau Karl-Marx-Stadt, Karl-Marx-Stadt, German Democratic Rep.

Filed Oct. 15, 1979, Ser. No. 84,805

Int. Cl.[3] D04B *23/06*

U.S. Cl. 66—84 R **7 Claims**



1. In a warp knitting machine operative for producing patterned plush-loop warp knit fabric, in combination, means for forming a ground fabric, including a row of hooked knitting needles, means cooperating with the knitting needles for feeding knitting thread onto the needles and forming the interlaced adjacent wales of a ground fabric, and means for inlaying inlay thread into the ground fabric; a row of plush bars located intermediate adjoining needles; a respective set of pile-thread guiders for each needle of the row of needles, the pile-thread guiders of each such set being individually displaceable between a non-selected position and a selected position; and a guide-comb structure operative for maintaining separation between the pile threads of selected pile-thread guiders and the pile threads of non-selected pile-thread guiders, the guide comb structure being mounted for shogging motion in the direction in which successive needles of the needle row are spaced one from the next and also for lifting and lowering motion in a direction generally perpendicular to the general plane defined by the row of needles, the guide-comb structure having a series of blades defining first inter-blade gaps alternating with second inter-blade gaps, the first inter-blade gaps serving to guide pile threads from the pile-thread guiders to the fabric produced, the guide-comb structure being so located relative to the row of needles and relative to the selected and non-selected positions or the pile-thread guiders that non-selected pile threads pass through the first inter-blade gaps at one location in the first gaps whereas the selected pile threads pass through the first inter-blade gaps at another location in the first gaps, the knitting needles when moving from cast-off to extended position passing through the second gaps of the guide-comb structure; and a pile-thread-laying bar provided with pile-thread-laying members mounted to pass through the inter-blade gaps of the guide comb structure and lay the selected pile threads into the hooks of the needles.

4,266,412

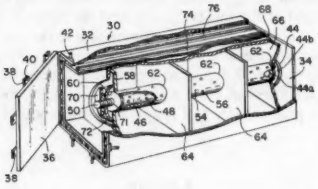
FILTERING DEVICE FOR DRY CLEANING

Rosario Merenda, 966 Port Washington Blvd., Port Washington, N.Y. 11050

Filed Jun. 29, 1979, Ser. No. 53,245

Int. Cl.[3] D06F *43/08*

U.S. Cl. 68—18 F **3 Claims**



1. A dry cleaning system for cleaning clothes by cleaning solvent circulating therethrough, comprising a drum in which the clothes to be cleaned are placed, a tank for receiving the cleaning solvent after use in the drum for washing, a pump for circulating the cleaning solvent in the tank to the drum, a first filtering device situated between the drum and the pump for removing impurities dissolved in the cleaning solvent before re-using the solvent, and at least one second filtering device connected to the first filtering device for removing solid impurities before the soluble impurities are removed at the first filtering device, said second filtering device comprising a casing including a front door and a rear end wall having an annular shoulder projecting inwardly therefrom, an inlet conduit means situated in said casing and passing through the rear end wall, said inlet conduit means having a plurality of perforations at the periphery thereof and a threaded front projection, outlet conduit means at the rear end wall of the casing, a first filter assembly including an elongated base member to substantially cover said inlet conduit means and to snugly fit with the annular shoulder of the rear end wall, said base member having a plurality of perforations at the periphery thereof, a plurality of flanges detachably connected around said base member and first filter means carried by said flanges to substantially cover

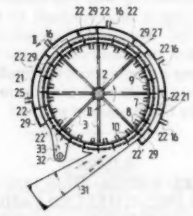
said base member, said threaded front projection of the inlet conduit means extending through the front flange of the first filter assembly and being fastened by a nut to thereby position the first filter assembly around the inlet conduit means, spacer means situated between said first filter means and said casing, said spacer means including a porous wall and a plurality of ribs provided at the outer periphery of the porous wall, and a plurality of second filter assemblies situated between the flanges of the first filter assembly, each second filter assembly including a frame having outer vertical flanges abutting said flanges of said first filter assembly and a perforated wall having a contracted section intermediate the ends thereof, and second filter means replaceably supported by said outer flanges of the second filter assembly, whereby the cleaning solvent flowing from the tank into the second filtering device through the inlet conduit means passes through the second and first filter means, so that the solid impurities are removed, and flows through spaces between the spacer means, and the solvent is transferred to the first filtering device by means of the outlet conduit means.

4,266,413

MEANS FOR WASHING CELLULOSE PULP

Erkki Yli-Vakkuri, Savonlinna, Finland, assignor to Enso-Gutzeit Osakeyhtö03, Finland

Filed Jan. 23, 1980, Ser. No. 114,501
Claims priority, application Finland, Jan. 26, 1979, 790251
Int. Cl.³ D21C *9/06*
U.S. Cl. 68—158 **5 Claims**



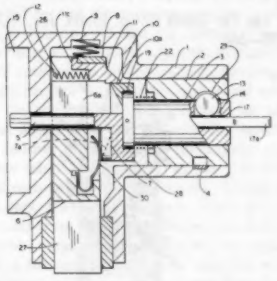
1. In an apparatus for washing cellulose pulp, including a drum with open ends rotating about a horizontal axis and onto the surface of which the cellulose is introduced in the form of a continuous fibre web, said drum having an outer shell which is coated with a wire fabric serving as filtering member for the web, and having stationary housings provided with a perforated bottom and having the same length as the drum, said drum having an outside encircled by said housings for introducing a pressurized washing liquid against the fibre web upon the wire fabric, and compartments affixed within the drum and formed by partitions with a length equalling that of the drum for receiving a suspension liquid displaced by the washing liquid from within the fibre web, each housing being provided with a washing liquid input connector and the compartments being provided with draining pipes for the displaced suspension liquid, and the housings being isolated from each other in the direction of rotation of the drum by means of front and rear walls, the pure washing liquid introduced through the connector of the housing which is last in the direction of rotation of the drum passing through the holes in the bottom to meet the fibre web, forcing an equivalent quantity of suspension liquid contained in the fibre web to pass through the wire fabric and through the holes in the drum's shell into the compartments under the housing and through the draining pipes to a valve on the axis at one end of the drum, said valve combining the suspension liquid flows coming from a plurality of compartments and conducting them to the supply connector, connected to the outer surface of the valve, of the last but one housing in the direction of rotation of the drum, whereafter this displaced suspension liquid in its turn displaces, under pressure, suspension liquid from within the pulp web, the flow resistances encountered by the washing liquid between the different housings causing a differential pressure between the washing liquids in different housings, and radial lamellae for inhibiting leakage of washing liquid thereby caused directly from one housing to the next, or leakage of suspension liquid displaced from within the fibre web from one compartment to another, by cooperation of said radial lamellae on the surface of the drum and unperforated zones associated with the bottoms and adjacent to the front and rear walls of the housings, wherein the improvement comprises that the mutual spacing of the lamellae on the continuation of the partitions, on the drum circumference, is less than the length of the unperforated zone, so that as the drum rotates there is at any time at least one of the lamellae in sealing contact with each unperforated zone located between the front and rear walls of each housing.

4,266,414

STEERING COLUMN AND IGNITION LOCK FOR MOTOR VEHICLE

Rudolf Eichenauer, Höllbergstrasse 1, D-6000 Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 22, 1978, Ser. No. 944,692
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1977, 2749158
Int. Cl.³ B60R *25/02*
U.S. Cl. 70—252 **1 Claim**



1. In a lock arrangement for a motor vehicle having a steering column, which comprises

(a) a housing defining an axial bore and a cross bore intersecting therewith,

(b) a key controlled lock cylinder mounted in the axial bore of the housing for spring-biased axial displacement from an outwardly into an inwardly displaced position, and for rotation by the key about the axis of the bore in the inwardly displaced position into selected operating positions including a driving position, a ready-to-lock position and a locking position,

(1) the lock cylinder having an axial keyhole for inserting the key in one axial direction and withdrawing the key in the opposite axial direction,

(c) a lock bolt mounted in the cross bore for displacement from a retracted position into a locking position upon withdrawal of the key from the keyhole in the opposite axial direction,

(1) the bolt having a keeper engaging a recess in the steering column in the locking position,

(d) spring means engaging the lock bolt and biased to displace the lock bolt into the locking position,

(e) latch means mounted on the lock bolt and cooperating with the lock cylinder for maintaining the lock bolt in the retracted position when the lock cylinder is in the inwardly displaced position, and

(f) actuating means arranged to displace the lock bolt between the retracted and locking positions, the bolt actuating means including

(1) a driving member operated by the rotation of the lock cylinder to displace the bolt against the bias of the spring means into the retracted position to disengage the keeper from the steering column, the driving member including a control ring rotating and axially displaced with the lock cylinder, the control ring having a periphery for engagement with the latch means in the retracted position of the lock bolt, and a cam projecting from the control ring towards the lock bolt:

(g) the improvement of a leaf spring having one end seated in a recess in the lock bolt and another end extending towards the cam, the leaf spring and the cam being arranged to press the lock cylinder axially outwardly in the ready-to-lock position and the leaf spring being moved by the lock bolt out of contact with the cam when the bolt is moved into the locking position.

4,266,415

PNEUMATIC DOOR LOCKS

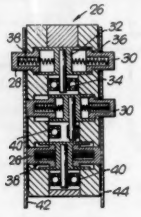
Walter W. H. Clarke, Brooklands, Marsh La., Eversley, Hampshire, England

Filed Aug. 6, 1979, Ser. No. 63,908

Claims priority, application United Kingdom, Aug. 8, 1978, 32587/78

Int. Cl.[3] **E05B** *19/06, 35/08, 37/16, 51/02*

U.S. Cl. 70—264 **5 Claims**



1. A door lock comprising an operating handle for mounting on an external face of the door and a locking bolt for securing the door in a closed position, the lock comprising a coding valve assembly comprising a plurality of pairs of spring-loaded plungers each pair biassing a valve member to a central, neutral position, a continuous length of a resiliently flexible tube disposed at opposite sides of each of said valve members, a fluid pressurising member operable in response to operation of the handle being connected to one end of the tube, a complementary fluid pressurized member operable to release the bolt being connected to the other end of the tube, a first code card insertable in the lock and cooperable with the ends of the plungers at one side of the valve assembly, a second code card and access means in the lock for introducing the second code card into the lock to cooperate with the ends of the plungers at the opposite side of the valve assembly whereby, in the event that the coding on the second code card matches the coding on the first card the pairs of valve plungers are subjected to the same constraints and the valve members remain in their central, neutral positions to permit communication between the fluid pressurising member and the complementary release member to release the lock bolt and in the event of a mismatching of the coding on said cards at least one of the plungers is displaced to move the associated valve member, to squeeze closed the tube thereby blocking communication between the pressurising member and the complementary member to prevent release of the lock bolt.

4,266,416

DEVICE FOR THE PRODUCTION OF BLISTERS

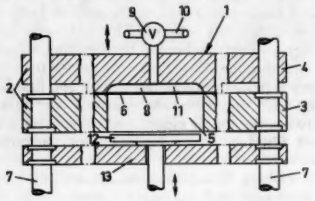
Werner Festag, and Hans-Ueli Müller, both of Schaffhausen, Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Mar. 14, 1979, Ser. No. 20,216

Claims priority, application Switzerland, Mar. 31, 1978, 3460/78

Int. Cl.[3] **B21D** *26/04*

U.S. Cl. 72—60 **9 Claims**



1. A device for the manufacture of blisters using a metal-plastic composite foil which can be deep drawn which comprises a clamping facility having at least one closed chamber therein and having two separable parts between which said metal-plastic composite foil can be clamped in such a way that it is immovably and fixedly held, said clamping facility including means for shaping the foil into a blister, means for pre-stretching said foil into a pendant bubble comprising at least one pipeline communicating with said chamber and fitted with a valve for supplying a fluid medium to said chamber for pre-stretching the foil, wherein said closed chamber is formed together with the foil clamped firmly in the clamping facility, said device including a shaping tool for finally shaping the foil operatively associated with said foil, thereby obtaining improved depth in the finally shaped product.

4,266,417

STEEL FLANGED WHEEL RIMS FOR MOTORIZED BICYCLES OR TWO-WHEELED VEHICLES AND A PROCESS FOR PRODUCING THE RIMS

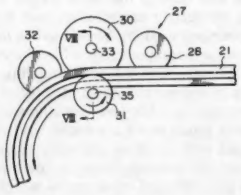
Kazuo Imamura, and Toshio Minamoto, both of Kaga, Japan, assignors to Daido Kogyo Co., Ltd., Ishikawa, Japan

Filed Apr. 18, 1979, Ser. No. 31,026

Claims priority, application Japan, May 9, 1978, 53-54096

Int. Cl.[3] **B21D** *5/08, 11/10*

U.S. Cl. 72—168 **2 Claims**



1. A process for producing an integral and unitary steel flanged wheel rim, said process comprising:

providing a single steel band, and passing said steel band longitudinally and successively through a series of shaping rolls and therein sequentially plastically deforming said steel band to form a longitudinal wheel rim blank having a cross-sectional configuration including a rim body, a pair of spaced and parallel hollow ears extending outwardly from a first side of said rim body at opposite lateral edges thereof, each said hollow ear including a laterally outer leg portion and a laterally inner leg portion, a pair of beads, each said bead extending laterally inwardly from a

laterally inward portion of a respective said inner leg portion of a respective said hollow ear, a recess formed in said rim body laterally centrally thereof between laterally inner ends of said beads, said recess opening at said first side of said rim body and convexly extending from an opposite second side of said rim body, and a flange extending from said second side of said rim body at said convexly extending recess, said flange having a pair of leg portions;

providing a bending machine including presser roll means, outer and inner feed roll means, said inner feed roll means including a pair of axially spaced rolls with a space therebetween, said pair of rolls being axially movable toward and away from each other, and bending roll means;

feeding said blank through said bending machine by rotating said outer and inner feed roll means in contact with said first and second sides, respectively, of said blank;

pressing said presser roll means against said first side of said blank at a position upstream of said feed roll means, and pressing said bending roll means against said first side of said blank at a position downstream of said feed roll means, and thereby bending said blank about said inner feed roll means as a fulcrum and thus forming said blank into a ring-shaped member with said flange extending radially inwardly; and

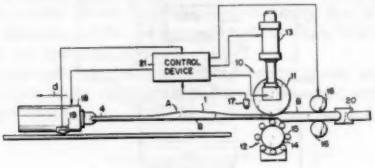
during said steps of feeding and bending, axially moving said pair of rolls of said inner feed roll means together and thereby pressing said leg portions of said flange together and thus substantially preventing radial compression and corrugation of said flange during said step of bending.

4,266,418

METHOD FOR MANUFACTURING A TAPER SPRING

Yoshihiro Sakai, and Jun Takahashi, both of Yokohama, Japan, assignors to NHK Spring Co., Ltd., Yokohama, Japan

Filed Jun. 18, 1979, Ser. No. 49,176
Int. Cl.³ B21B *1/42*
U.S. Cl. 72—197 **4 Claims**



1. In a method of manufacturing a taper spring by rolling a material at varied rolling thicknesses, the improvement comprising:

applying a predetermined longitudinal tension to said material being rolled by drawing said material in the rolling direction by a drawing means located at the outlet side of a rolling mill and passing said material through a pair of relatively movable feed rolls located at the inlet side of said rolling mill, said feed rolls being relatively movable toward and away from each other to press against said material with a force which is a function of said predetermined tension; and

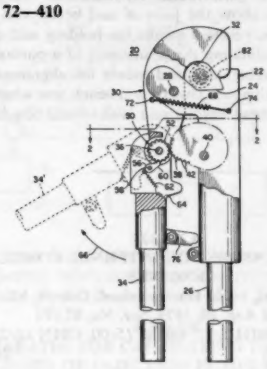
rolling said material by means of a planetary rolling mill while said predetermined longitudinal tension is being applied, said planetary rolling mill being located between said means and said feed rolls.

4,266,419

COMPRESSION TOOL

Michael A. Grundfest, Forest Hills, N.Y., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Jul. 10, 1978, Ser. No. 923,008
Int. Cl.² B21D *7/06*
U.S. Cl. 72—410 **12 Claims**



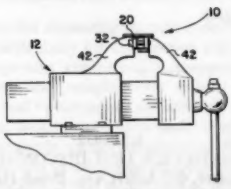
1. A compression tool, comprising: a first and a second die carrying member; means pivotally coupling said first die carrying member to said second die carrying member; a cam member rotatably mounted on said first die carrying member and having a cam surface; a cam driver rotatably mounted through its central axis of rotation on said second die carrying member and having a cam surface in selective contacting relationship with said cam surface of said cam member for selectively moving said first and said second die carrying members with respect to one another in response to the angular position of said cam member relative to said cam driver; a lever member coupled to said cam driver for selectively driving said cam driver about its central axis of rotation in a first direction; and a projection on said lever member extending towards said first die carrying member and arranged for abutting contact therewith to provide a fulcrum for said lever member at selective positions of said lever member relative to said first die carrying member.

4,266,420

CRIMPING TOOL

John A. Walker, Claremore, Okla., assignor to Unit Rig & Equipment Co., Tulsa, Okla.

Filed Oct. 26, 1979, Ser. No. 88,415
Int. Cl.³ B21D *7/00*
U.S. Cl. 72—416 **4 Claims**



1. A crimping tool comprising a top plate, a bottom plate, said plates being parallel, a rigid arm disposed between said plates and being affixed thereto, a movable arm positioned adjacent said rigid arm and having one end thereof pivotally mounted to said plates adjacent one end of said rigid arm, said rigid arm and said movable arm being positioned so that the free ends of said arms opposite said one end comprise opposed

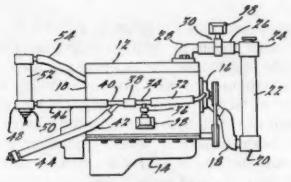
crimping jaws, said crimping jaws allowing for positioning of a portion of a circle clamp therebetween when said arms are in an open position, said top plate having a sufficient width to allow said top plate to rest atop the open jaws of a bench vise while said crimping jaws are fully opened, said bottom plate having a width no greater than the combined widths of said arms in order to allow the jaws of said bench vise to close against said arms, resilient means for holding said crimping jaws open for facilitating the positioning of a portion of said circle clamp therebetween, and means for alignment of said crimping tool within said jaws of said bench vise whereby said crimping jaws extend beyond said jaws of said bench vise.

4,266,421

VIBRATION SENSORS FOR INTERNAL COMBUSTION ENGINES

John A. McDougal, 14388 Harbor Island, Detroit, Mich. 48215

Filed Aug. 20, 1979, Ser. No. 67,991
Int. Cl.³ G01H *3/12*; G01M *15/00*; G01N *33/22*
U.S. Cl. 73—1 DV **24 Claims**



1. For an internal combustion engine having a liquid coolant supply for cooling said engine, a combustion condition sensing system comprising:

passage means communicating with said engine for containing said coolant, said passage means extending away from said engine to provide a portion which is remote from said engine and being at least in part elastomeric to isolate said remote portion from substantial direct vibrations of said engine,

a vibration sensor which is responsive to vibrations indicative of said combustion condition; and

mounting means for mounting said vibration sensor on said remote portion of said passage means so that said vibration sensor is in vibration communication with said coolant for sensing vibrations transmitted through said coolant from said engine but is isolated from substantial direct vibration of said engine.

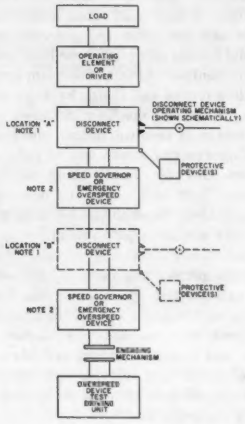
4,266,422

OVERSPEED DEVICE TEST DISCONNECT DEVICE

Richard L. Ullinger, 407 Jeffris Ave., Beach Haven, N.J. 08008

Filed Mar. 17, 1980, Ser. No. 131,228
Int. Cl.³ G01P *21/00*
U.S. Cl. 73—2 **1 Claim**

1. In an installation of rotational equipment having a speed responsive device normally connected thereto the improvement comprising: a disconnect device for interrupting the connection between the rotational equipment and the speed responsive device in a test mode, a protective device responsive to the disconnect device for rendering the rotational equipment inoperative in the test mode, the speed responsive device further having a means for engagement by a driving



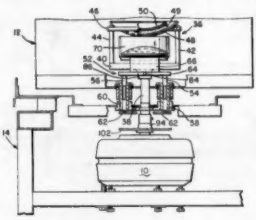
device for driving the speed responsive device at a known speed in the test mode.

4,266,423

USE OF ACID AS AN ANALYSIS AID IN SALTED MEAT SAMPLES

James P. Hadden, Tipp City, Ohio, assignor to Hobart Corporation, Troy, Ohio

Filed Oct. 1, 1979, Ser. No. 80,841
Int. Cl.³ G01N *5/04*
U.S. Cl. 73—15 B **8 Claims**



1. In a method of determining the amount of fat in a sample of a salted meat wherein the fat is heat releasable in liquid form from the sample, said method including the steps of (a) applying energy to said sample to heat the same and cause fat in said sample to be rendered as a liquid, (b) continuously monitoring the weight of said sample during the applying of energy thereto at least from a time when said sample begins losing weight, and (c) terminating the applying of energy to said sample once the residue of said sample reaches a predetermined chemical consistency, the improvement comprising:

preparatory to applying energy to said sample, mixing with said sample an amount of acid sufficient to lower the pH of the sample to below the isoelectric point of the protein contained therein.

4,266,424

APPARATUS FOR DETERMINING THE STRESS-STRAIN PROPERTIES OF VISCOELASTIC MATERIALS IN THE MOLTEN STATE

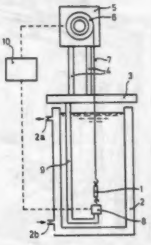
Helmut Muenstedt, Wachenheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 27, 1979, Ser. No. 15,617

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1978, 2812275

Int. Cl.³ G01N *3/08*

U.S. Cl. 73—15.6 **2 Claims**



1. Apparatus for determining the stress-strain properties of viscoelastic liquid, especially of polymers in the molten state, comprising:

a vessel containing a thermostable liquid bath;

a bar-shaped test specimen of viscoelastic liquid arranged vertically in the bath, so that the bath is inert to the test specimen and has a density adjusted to be virtually equal to the density of the test specimen;

means for heating the bath in the vessel and for maintaining a uniform bath temperature over the length of the test specimen; and

means to stretch the test specimen, comprising a tape, one end of which is attached to the upper end of the test specimen and the other end of which is attached to a motor-driven reel, and a load cell which is located in a fixed position inside the bath and is connected directly or indirectly to the lower end of the test specimen,

the load cell being arranged so as to measure continuously the tensile forces along the vertical center line of the combination of the test specimen and the means to stretch the test specimen, and

the load cell being firmly attached to the lower, angled portion of the support, the upper end of which extends beyond the surface of the thermostable bath and is firmly attached outside the bath.

4,266,425

METHOD FOR CONTINUOUSLY DETERMINING THE COMPOSITION AND MASS FLOW OF BUTTER AND SIMILAR SUBSTANCES FROM A MANUFACTURING PROCESS

John J. Allport, Saratoga, Calif., assignor to Zikonix Corporation, Sunnyvale, Calif.

Filed Nov. 9, 1979, Ser. No. 92,983

Int. Cl.³ G01N *33/06, 23/203, 27/22*

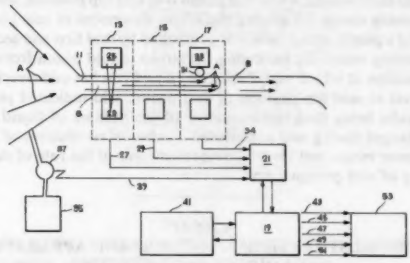
U.S. Cl. 73—61 R **12 Claims**

1. A non-destructive method for continuously determining the water and fat content of a material with known curd content such as butter as it emerges from the manufacturing process comprising:

continuously measuring the dielectric constant of the material after it emerges from the manufacturing process,

continuously measuring the density of the material after it emerges from the manufacturing process,

continuously calculating the water and fat content of the material by comparing the measured dielectric constant,



the measured density and the known curd content to calibration values determined from prior laboratory tests.

4,266,426

APPARATUS FOR CALIBRATING THE RATE OF DELIVERY OF INJECTION PUMPS FOR DIESEL ENGINES

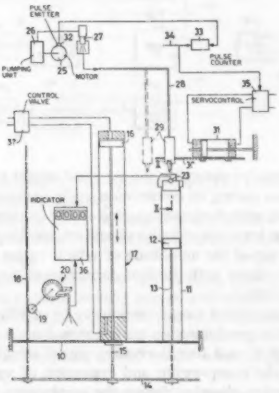
Roberto Gandini, Quinzano D'Oglio, Italy, assignor to Officine Meccaniche Odolini Catullo S.A.S. di Roberto Gandini & C., Quinzano D'Oglio, Italy

Filed Mar. 9, 1978, Ser. No. 885,006

Claims priority, application Italy, Mar. 9, 1977, 21092 A/77

Int. Cl.³ G01F *1/72;* G01M *15/00*

U.S. Cl. 73—119 A **7 Claims**



1. An apparatus for measuring the rate of delivery of a liquid pumping unit, particularly for an injection pump for a Diesel engine, said apparatus comprising a pumping unit, motor means for driving said pumping unit, at least one vertically disposed cylindrical vessel having an open top end, a duct fed by said pumping unit opening into said vessel through said open top for selectively causing discharge of liquid from said pumping unit into said vessel, counting means for counting the number of revolutions of said motor means, control means for simultaneously starting the discharge of liquid into said vessel and the operation of said counting means, said counting means being operable to stop said discharge of liquid when said counting means reaches a preselected number, said vessel having a bottom wall in the form of a piston axially movable within said vessel, driving means operable at the end of each liquid discharging period of said duct for moving said piston axially from a lowered rest position to a top position to cause the received liquid to overflow from the vessel through an

overflow cutaway arranged at a predetermined overflow level, first sensing means arranged at said overflow level for sensing the attainment of said overflow level by said discharged liquid and then sensing when said piston is in said top position, second sensing means for sensing the lifting movement of said piston, and a piston stroke indicator controlled by said first and second sensing means for indicating the stroke of said piston from the position at which said discharged liquid reaches said overflow level to said top position of said piston, said indicated piston stroke being thus representative of the volume of liquid discharged during said preselected number of revolutions of said motor means and therefore representative of the rate of delivery of said pumping unit.

4,266,427

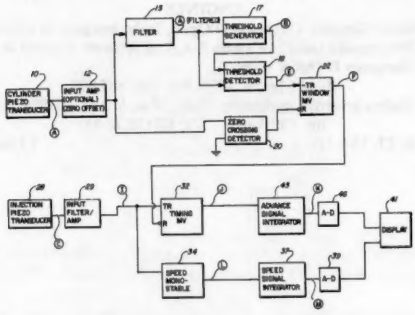
COMBUSTION TIMING METHOD AND APPARATUS WITH DIRECT TDC DETECTION

William M. Wesley, Kildeer, Ill., assignor to Creative Tool Company, Lyons, Ill.

Continuation-in-part of Ser. No. 56,501, Jul. 11, 1979. This application May 9, 1980, Ser. No. 148,543

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—119 A **14 Claims**



1. A system for detecting the top dead center position of an engine piston during its combustion cycle comprising

transducer circuit means coupled to the combustion chamber of at least one cylinder of said engine for producing an output signal the amplitude of which varies substantially in accordance with the first derivative of pressure within said cylinder;

a signal processing circuit responsive to said first derivative signal for producing an output signal upon a change of polarity of said first derivative signal which occurs between the compression and expansion of volume in the combustion chamber during the combustion cycle; and,

means for utilizing said polarity change as an indication of the achievement of the top dead center position by said piston.

4,266,428

METHOD AND APPARATUS FOR NON-DESTRUCTIVE INSPECTION OF TIRES

Morris D. Ho, Walnut Creek, Calif., assignor to Bandag Incorporated, Muscatine, Iowa

Filed Apr. 19, 1979, Ser. No. 31,962

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—146 **44 Claims**

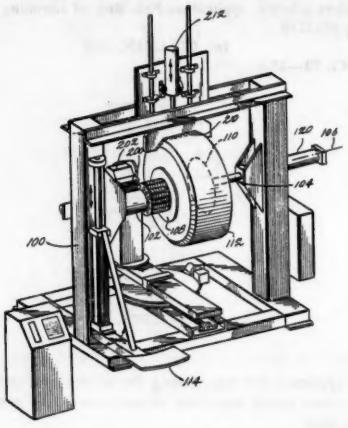
1. A nondestructive tire testing apparatus comprising:

an ultrasonic acoustic transmitter,

an ultrasonic acoustic receiver spaced from said transmitter so as to permit the passage of a single tire wall therebetween, said receiver being operatively aligned to receive ultrasonic acoustic signals from said transmitter, after passage through a predetermined area of said tire wall, and to provide corresponding ultrasonic electrical signals,

electrical pulsing circuits connected to repetitively electrically activate said ultrasonic acoustic transmitter and to cause the generation of corresponding repetitive bursts or pulses of said ultrasonic acoustic signals,

gated receiver circuits connected to provide electrical measurement signals representing the relative strength of ultrasonic acoustic signals received by said receiver during repetitive gated time intervals which intervals are synchronized to include only the initial portions of each received burst of said ultrasonic acoustic signals, and



display means connected to receive said electrical measurement signals and to provide humanly sensible output indications representing the condition of said tire wall.

4,266,429

SELECTABLE DEPTH WATER RETRIEVER

Thomas E. Brovold, 7721 Chanhassen Rd. #142, Chanhassen, Minn. 55317

Filed Sep. 17, 1979, Ser. No. 76,197

Int. Cl.³ G01N *1/12*

U.S. Cl. 73—425.4 R **9 Claims**

1. A selectable depth water retriever comprising:

(a) a container having

(b) an opening,

(c) a cover,

(d) means mounting said cover on said container and over said opening,

(e) said cover having an opening formed therein,

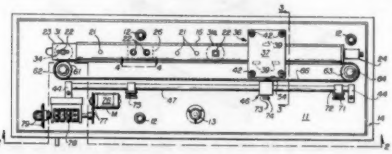
(f) a sealing member associated with said cover opening,
(g) a resilient member,
(h) means positioning said resilient member between said sealing member and said opening of said container normally urging said sealing member upon said opening of said cover,
(i) means for weighting said container, and
(j) means for attaching a retrieving device to said container for lowering and raising the container in the water.

4,266,430

PRECISION PRESSURE-RESPONSIVE FLUID GAUGE

Gene Glassey, San Diego, Calif., assignor to Fluid Data Systems, Inc., San Diego, Calif.

Filed Dec. 6, 1979, Ser. No. 100,937
Int. Cl.³ G01L *9/14*
U.S. Cl. 73—701 **13 Claims**



1. In a pressure-responsive gauge of the type having a base, a balance beam, a fulcrum pivotally supporting said beam relative to said base, pressure-responsive means interposed between said base and said beam arranged to tilt said beam, a poise slideable along said beam to counter-balance the force of said pressure-responsive means, drive means for moving said poise, said drive means including a flexible member extending parallel to said beam and a servo-motor arranged to move said flexible member, an armature attached to one end of said beam, a differential transformer excited by said armature, an electric circuit including said transformer and said servo-motor functioning to move said poise to null said transformer and a read-out driven by said servo-motor, the improvement comprising temperature responsive means to compensate for temperature variations in a vertical sense comprising a first spacer between said pressure-responsive means and said base of a different material than said pressure-responsive means, said first spacer and said pressure-responsive means having dimensions and coefficients of expansion such that they expand to the same extent as said fulcrum, a clamp adjustably clamping said transformer vertically relative to said base, a second spacer between said beam and said armature, and a third spacer between said base and said clamp, the materials of said clamp, armature and spacers being such that the position of the midpoint of said armature relative to the null point of said transformer remains fixed despite temperture variations.

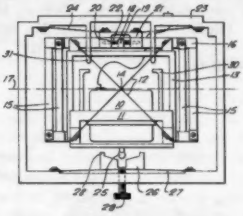
4,266,431

GYROSCOPIC APPARATUS

Alan P. Liebing, West Linton, Scotland, assignor to Ferranti Limited, Cheadle, England

Filed Dec. 4, 1979, Ser. No. 100,106
Claims priority, application United Kingdom, Dec. 6, 1978, 47332/78
Int. Cl.³ G01C *19/16, 19/26*
U.S. Cl. 74—5.1 **11 Claims**

1. Gyroscopic apparatus which includes a gyroscopic device having two mutually orthogonal sensitive axes, a two-axis gimbal system supporting the gyroscopic device for movement about two orthogonal horizontal axes by means of a pair of cross-spring pivots of zero stiffness, subsidiary suspension means arranged to support the gimbal system about two axes nominally parallel to and vertically above the said two horizontal axes, and damping means operable to damp movements



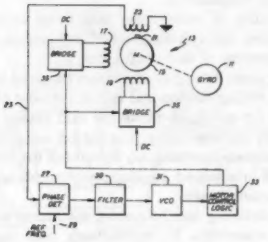
of the gimbal system about the two axes of the subsidiary suspension means.

4,266,432

GYRO MOTOR CONTROL

George F. Schroeder, Wayne, and Walter J. Krupick, Succasunna, both of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Apr. 24, 1978, Ser. No. 899,352
Int. Cl.³ G01C *19/10, 19/28*
U.S. Cl. 74—5.7 **4 Claims**



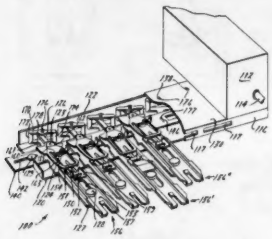
1. In a precision gyroscope, an improved drive system for the gyro wheel comprising:
(a) an induction motor having first and second stator windings and a rotor, said rotor mechanically coupled to the gyro wheel;
(b) a magnet on said rotor and sensing coil means on said stator to provide sensing means with a pulse train output having a frequency proportional to the rotational speed of said rotor with the pulses of said pulse train having a phase related to the phase of said motor within a given cycle of rotation;
(c) means to supply a reference frequency;
(d) a phase detector having as inputs the detected phase of said rotor and said reference frequency and providing an output representing the phase error therebetween;
(e) a voltage controlled oscillator having said phase error coupled thereto as an input and developing an output related thereto; and
(f) motor control means coupled to said voltage controlled oscillator for developing two-phase signals for energizing said first and second windings comprising:
(i) first and second bridges, each bridge comprised of four solid state switches in a bridge configuration, a respective first or second winding coupled across one diagonal of said bridge and a DC voltage across the other diagonal of said bridge; and
(ii) means for developing from said voltage controlled oscillator output two signals shifted 90° in phase and at the desired operating frequency for driving the switches of said bridges.

4,266,433

LOW PROFILE PUSHBUTTON RADIO TUNER

Robert M. McDonough, Hatfield, Pa., assignor to Ford Aerospace & Communications Corp., Detroit, Mich.

Filed Nov. 15, 1978, Ser. No. 960,884
Int. Cl.[3] H03J *5/12*
U.S. Cl. 74—10.33 **10 Claims**



1. In a pushbutton radio tuner comprising:
means for tuning selected radio frequencies;
a chassis defining a front, back, top and bottom for said tuner;
A shuttle bar connected to said tuning means for longitudinal movement to positions corresponding to said selected radio frequencies;
a plurality of pushbutton assemblies mounted for sliding motion, through the front of said chassis, transverse to the movement of said shuttle bar;
tuning cams having cam surfaces oriented transverse to both said sliding motion and said movement of said shuttle bar;
means for pivotally mounting said tuning cams on respectively corresponding pushbutton assemblies;
means on said pushbutton assemblies for locking said tuning cams in adjusted angular positions about their respective mounting means;
means defining cam followers, associated with said pushbutton assemblies, having surfaces with tangents that lie in planes parallel to said tuning cam surfaces, and being supported by said chassis for rotational following movement about individual predetermined axes in response to engagement by said angularly locked cams and for translating said rotational following movement to said shuttle bar to effect its longitudinal movement;
an improvement comprising:
means in said chassis for accurately positioning only said engaged cam follower means for rotation about its predetermined axis, while simultaneously providing minimal friction bearing retention of others of said plurality of cam follower means.

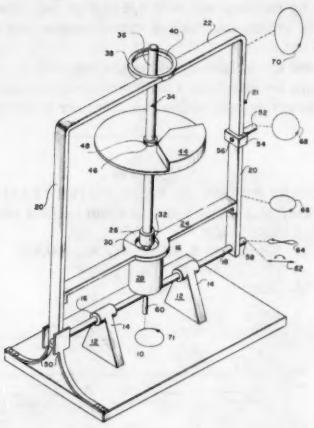
4,266,434

ROTATING OSCILLATORY MOTION POWER TAKE-OFF

David L. Burns, 4607 Griffin St., Moss Point, Miss. 39563

Filed Nov. 30, 1978, Ser. No. 964,966
Int. Cl.[3] B06B *1/16;* **B65G** *27/20*
U.S. Cl. 74—61 **10 Claims**

1. Power take-off apparatus, comprising:
a frame having an opening therethrough,
means supporting said frame for oscillatory and axial movement relative to an axis,
a shaft rotatably mounted on said frame and having a free end extending through said opening in spaced relation to at least a portion of the surrounding frame surface defining said openings,
a weight mounted in off-center relation of said shaft,
means for rotating said shaft and said weight thereon to cause the free end of said shaft to move along the frame surface defining said opening to effect oscillation and axial movement of said frame relative to said axis, and



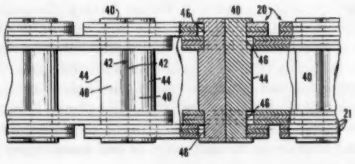
means mounted on said frame to enable power to be taken off said frame at different points thereon which generate different power output motions.

4,266,435

SEGMENTAL ROLLER DRIVE CHAIN

Wilfrid H. Bendall, 48-18 43rd St., Woodside, N.Y. 11377

Continuation-in-part of Ser. No. 947,483, Oct. 2, 1978, abandoned. This application Jun. 15, 1979, Ser. No. 48,716
Int. Cl.[3] F16G *13/02*
U.S. Cl. 474—227 **5 Claims**



1. A segmental roller drive chain having loosely assembled, apertured link members spaced transversely apart with overlapping end portions and registering apertures, interconnected by coacting pairs of segmental rocker-bearing members extending through the apertures, each of said link members comprising a plurality of comparatively thin, laterally flexible laminas in loose lateral contact with each other, each of said rocker-bearing members having coacting arcuate bearing portions and arcuate portions external thereto for engaging drive sprocket teeth, said portions external thereto being notched to engage and retain the link members transversely apart thereon, each of said laminas having aperture edge portions in loose bearing contact with the notched portions, the apertures of said link members comprising an assembly clearance for free manual insertion or removal of the bearing members for selective substitution or replacement with members having coacting arcuate bearing contact portions of different radii.

4,266,436
TORQUE DIVISION GEARING

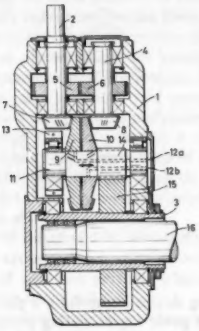
Rudi Reppert, Bochum, Fed. Rep. of Germany, assignor to WGW Westdeutsche Getriebe- und Kupplungswerke GmbH, Fed. Rep. of Germany

Filed May 21, 1979, Ser. No. 40,729

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1978, 2826022

Int. Cl.³ F16H *35/06, 1/14*

U.S. Cl. 74—395 **7 Claims**



7. A torque division gear comprising: an input shaft having a first gear arranged thereon and also having a first bevel gear; a gear shaft parallel to the input shaft having a second gear driven via the first gear and also having a second bevel gear; an axially freely displaceable shaft having mounting means for allowing free displacement in response to operational forces during operation of the gearing; third and fourth bevel gears on the displaceable shaft respectively mating with the first and second bevel gears, said freely displaceable shaft also having a third gear; an output shaft having a fourth gear arranged thereon driven by the third gear such that axial displacements of the displaceable shaft are isolated from the output shaft; and means for controllably adjusting the third and fourth bevel gears on the displaceable shaft to allow angle position adjustment of the third and fourth bevel gears externally of the entire torque division gearing.

4,266,437
BALL SCREW AND NUT ASSEMBLY

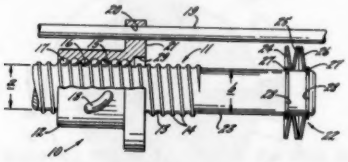
Bruno Obergfell, Wolfschlugen, Fed. Rep. of Germany, assignor to Warner Electric Brake & Clutch Company, South Beloit, Ill.

Filed May 4, 1979, Ser. No. 35,818

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1979, 2903630

Int. Cl.³ F16H *29/20*

U.S. Cl. 74—424.8 R **5 Claims**



1. A ball screw assembly having, in combination, an elongated shaft with a first portion formed with a helical groove having a predetermined root diameter, a nut telescoped on said shaft and normally disposed along said first portion, said nut having an internal helical groove opposing the groove in said shaft whereby the two grooves form a helical channel, an endless train of balls of predetermined axial length disposed in said channel and coupling said nut and said shaft whereby the nut traverses axially relative to the shaft upon relative turning of the nut and the shaft, and stop means acting between said shaft and said nut and operable to limit the movement of the nut at a predetermined position along the shaft, said shaft having a cylindrical portion extending beyond said first portion and being of a diameter substantially equal to said root diameter whereby said balls roll on the surface of said cylindrical portion when said nut is telescoped over the cylindrical portion, said cylindrical portion being at least equal to the axial length of said train and being located relative to said first portion to be telescoped by said nut when the nut is in said predetermined position, the diameter of said cylindrical portion being slightly larger than said root diameter whereby at least portions of the assembly of said shaft and said nut and said balls are elastically deformed when the balls roll onto said cylindrical portion.

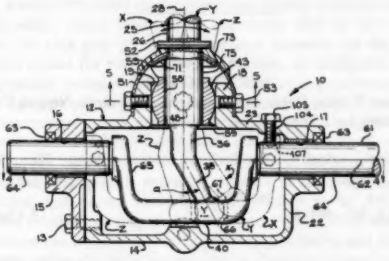
4,266,438
TRANSMISSION SHIFT CONTROL

Leo R. Kessmar, Northwood, Ohio, assignor to Dana Corporation, Toledo, Ohio

Filed Jul. 16, 1979, Ser. No. 58,068

Int. Cl.³ G05G *9/18*

U.S. Cl. 74—473 R **14 Claims**



1. A shift mechanism for the gears of a transmission comprising:

a pivotally mounted bushing assembly, said bushing assembly defining an aperture;

means for selectively engaging one of a plurality of gears in a transmission positioned in adjacent, spaced apart relationship to said bushing assembly; and

a shift lever rotatably positioned in said aperture, said shift lever being free to pivot with said bushing assembly, one end of said shift lever adapted for drivingly engaging said means for selectively engaging one of a plurality of gears in a transmission, whereby rotating said shift lever selects said gear in said transmission and pivoting said shift lever engages said selected gear in said transmission.

4,266,439
VIBRATION DAMPING DEVICE FOR A MECHANICAL CLUTCH RELEASE SYSTEM

Shinjiro Hayashi; Kiyoshi Taniyama; Kenichi Kikuchi, all of Toyota, and Teruo Akashi, Okazaki, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Sep. 25, 1978, Ser. No. 945,694

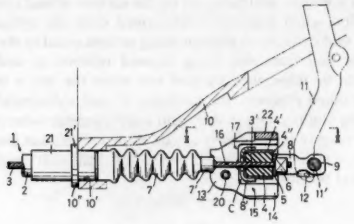
Claims priority, application Japan, Feb. 2, 1978, 53-11859[U]

Int. Cl.³ F16C *1/10;* **F16D** *23/00*

U.S. Cl. 74—501 R **3 Claims**

1. In combination with a mechanical clutch release system having an inner cable and a clevis connecting said inner cable to a clutch release fork, a vibration damping device comprising a damper weight mounted to said inner cable in the vicinity of

said clevis, said damper weight having a generally cylindrical hollow portion near said release fork to coaxially and spacedly encircle said clevis and said inner cable, said damper weight having a substantially solid portion longitudinally adjacent to said cylindrical hollow portion and having an axial bore for holding said inner cable therein, a first slit provided along the



entire length of said damper weight and through a wall portion of said hollow portion and communicating with said axial bore to permit movement of said inner cable into and out of said axial bore and said hollow portion, and a bolt extending normal to said first slit for securely holding said inner cable in said axial bore.

4,266,440

STEERING UNIT

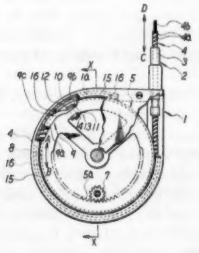
Mathew Berens, Battle Creek, Mich., assignor to Nippon Cable System Inc., Takarazuka, Japan

Filed Apr. 27, 1979, Ser. No. 34,144

Claims priority, application Japan, Nov. 30, 1978, 53/165736[U]

Int. Cl.³ F16C *1/10*

U.S. Cl. 74—501 R **5 Claims**



1. A steering unit comprising:

a housing:

a disc rotatably mounted in said housing, said disc having a grooved outer peripheral surface;

a push-pull control cable, said push-pull control cable being further comprised of an inner cable, wherein said inner cable has a first end secured to said disc, wherein the improvement comprises a concave portion formed in said outer periphery surface of said disc, said concave portion extending into said outer peripheral surface of said disc to a greater degree than said groove in said peripheral surface to a point where said first end of said inner cable is connected to said disc by means of an end fitting extending between said first end of said inner cable and said concave portion of said disc, said end fitting having a curved portion extending from said groove into said concave portion wherein a head portion of said end fitting is secured to said concave portion of said disc.

4,266,441

POSITIONING DEVICE WITH A PIVOTABLE POSITIONING MEMBER

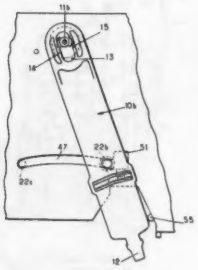
Yves A. H. Stordeur, Paris, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Oct. 18, 1978, Ser. No. 952,333

Claims priority, application France, Oct. 20, 1977, 77 31611

Int. Cl.³ G05G *1/04*

U.S. Cl. 74—523 **19 Claims**



1. A positioning device comprising a pivotable positioning member having a guide lug extending parallel to and spaced from its pivot axis, and a support member cooperable with said positioning member and having a guideway for said guide lug, said guide lug having means for maintaining said positioning member on said support member in a direction parallel to the pivot axis by co-operation with the portion of said support member defining said guideway, said guideway having an enlarged end for introducing said guide lug into said guideway, and abutment means for preventing said guide lug from re-entering into the enlarged end of said guideway after said positioning member is mounted on said support member and further comprising a strip integrally formed with the rest of said positioning member and spaced therefrom along its longitudinal sides by slits, said strip having a protruding portion extending parallel to the pivot axis of said positioning member, said strip being elastically urged through the end of the protruding portion against one side of said support member when said positioning member is mounted thereon.

4,266,442

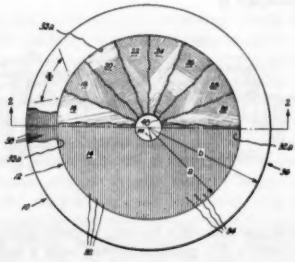
FLYWHEEL INCLUDING A CROSS-PLY COMPOSITE CORE AND A RELATIVELY THICK COMPOSITE RIM

Edward S. Zorzi, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 25, 1979, Ser. No. 33,189

Int. Cl.³ G05G *1/00, 3/00;* F16F *15/30;* F16C *15/00*

U.S. Cl. 74—572 **14 Claims**



1. In a circumferentially reinforced cross-ply composite flywheel comprising

a cross-ply composite central portion comprising a plurality

of fiber-containing layers, the fibers of each layer being parallel to each other and extending in radial and chordal directions and being disposed in a matrix of binder material, the fibers of each successive layer being oriented at a single, predetermined angle between approximately 70° and approximately 110° to the fibers of the preceding adjacent layer such that at least four fiber-containing layers are disposed between any two layers in which the fibers of both such layers extend substantially parallel to each other, and

means for radially outward transfer of centrifugal loading from the radially outermost chordal fibers of each layer of said central cross-ply composite portion, said load transfer means being an outer rim portion contiguous with said cross-ply composite central portion and of an axial thickness at least as great as that of said central portion, said outer rim portion comprising a multiplicity of circumferentially-extending fibers disposed in a matrix of binder material, the density-to-stiffness ratio of said rim portion being substantially less in value than the density-to-stiffness ratio of said cross-ply composite central portion,

the improvement comprising:

(1) β is equal to or less than 0.92, where β is the ratio of the radius of said cross-ply composite central portion to the outer radius of said rim portion, where both radii are expressed in like units, and

(2) said rim and central portions are secured together by an interference fit δ of at least 0.001 inch per inch of said outer radius of said rim portion, where δ is the ratio δ/b where b is said outer radius and $\delta = u_C + u_R$, where u_C is the circumferentially average radial distance said central portion moves in expansion when said rim portion is removed therefrom with the flywheel at rest and said central portion is at a temperature of 70° F., and u_R is the circumferentially average radial distance which the inner circumference of said rim portion moves in contraction when said central portion is removed therefrom with the flywheel at rest and said rim portion is at said temperature, at least one of u_C and u_R being other than zero, with δ, b, u_C and u_R expressed in like units.

4,266,443

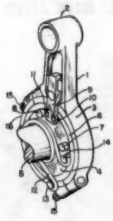
ARTICULATING GUIDE SPRING

Edward M. McWhorter, 6931 Greenbrook Cir., Citrus Heights, Calif. 95610

Filed Jul. 6, 1978, Ser. No. 922,490

Int. Cl.³ G05G *1/00*

U.S. Cl. 74—579 E **2 Claims**



1. In connecting rods of the character described, an upper connecting rod pivotally attached to a lower connecting rod at a pivoting joint, a spring fixedly attached to the said upper connecting rod and to the said lower connecting rod at points above and below the said pivoting point respctively, said spring being under strain in a manner which tends to keep the said upper connecting rod and the said lower connecting rod in the untoggled condition relative to the said pivoting joint.

4,266,444

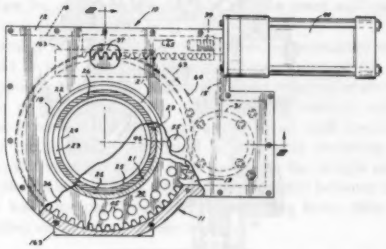
HIGH-LOW SPEED ROTARY DRIVE MECHANISM

Ronald B. Anderson, Plymouth; Walter W. Svendsen, New Brighton; Gary H. Beckley, Roseville, and Clifford Caneer, Jr., Anoka, all of Minn., assignors to Longyear Company, Minneapolis, Minn.

Filed Jun. 14, 1979, Ser. No. 48,490

Int. Cl.³ F16H *37/06*; E21B *3/00*

U.S. Cl. 74—661 **19 Claims**



1. Apparatus for use in drivingly rotating a driven member, comprising a frame, first annular means rotatably mounted on the frame for surrounding at least a part of the driven member, said first annular means having a first annular ring gear portion, a motor mounted on the frame and having a driven rotary motor shaft, means mounted on the motor shaft to drivingly rotate the ring gear portion, a ring gear mounted on the first annular means for rotation relative thereto, an elongated rack reciprocally mounted on the frame in driving engagement with the ring gear, piston cylinder means mounted on the frame for reciprocating the rack, and means mounted by the ring gear for rotation therewith for transmitting a rotary driving force in one angular direction from the ring gear to the gear portion when the ring gear is drivingly rotated in said one angular direction and permit said ring gear portion to be drivenly rotated relative the ring gear in said one angular direction and means on the annular means for drivingly rotating said driven member when the ring gear portion is drivenly rotated in said one angular direction.

4,266,445

LOCKING DIFFERENTIAL

Edward J. Goscenski, Jr., Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 22, 1979, Ser. No. 22,664

Int. Cl.³ F16H *1/44*

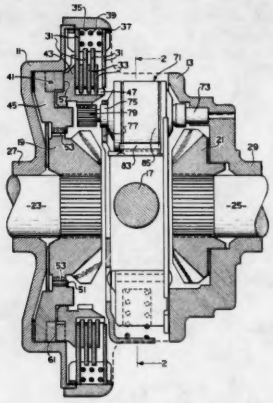
U.S. Cl. 74—711 **13 Claims**

1. In a differential gear mechanism of the type including a gear case defining a gear chamber, differential gear means disposed in said gear chamber, said differential gear means including at least one input gear and first and second output gears, lockup means for locking up said differential gear means to retard differentiating action, actuating means for actuating said lockup means, said lockup means including clutch means operable between an engaged condition, effective to retard relative rotation between said gear case and said output gears, and a disengaged condition, said lockup means further including cam means operatively associated with said first output gear, said cam means including a pair of cam members, one of said cam members being movable relative to the other cam member to effect said engaged condition of said clutch means, said cam members including a main cam member, said actuating means including retarding means operable to engage said lockup means and retard rotation of said main cam member, the improvement comprising:

(a) said cam means extending radially outwardly from said first output gear;

(b) said main cam member defining an inner peripheral re-

tarding surface disposed radially outwardly of said first output gear; and



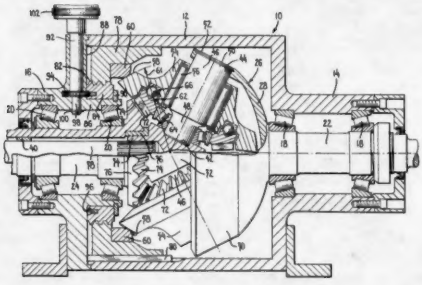
(c) said retarding means being operable to engage said retarding surface radially outwardly of said first output gear.

4,266,446

HIGH TORQUE INFINITELY VARIABLE TRACTION DRIVE TRANSMISSION

Joseph E. Fritsch, Oak Park, Mich., assignor to Massey-Ferguson Inc., Detroit, Mich.

Filed Apr. 5, 1979, Ser. No. 27,197
Int. Cl.³ F16H *15/50*
U.S. Cl. 74—796 **23 Claims**



1. A high torque infinitely variable traction drive comprising:

a transmission housing;

coaxial input and output shafts having end portions extending within said housing;

an input carrier rotatable with the input shaft;

a plurality of pins, opposite end portions of the pins being carried by the input carrier;

a plurality of planetary members carried by the plurality of pins, each of the planetary members having a traction surface;

a plurality of gears driveable by the plurality of planetary members;

gearing rotatable with the output shaft in driven relationship with the plurality of gears;

a traction ring disposed within the housing and coaxial with the input shaft and engaged by the traction surface of the planetary members, the diameter of the traction surface being approximately the same as the internal diameter of the traction ring; and

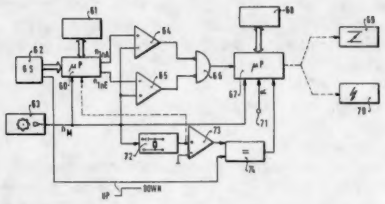
means to axially shift the traction ring.

4,266,447

APPARATUS AND METHOD FOR IMPROVING THE JOLT CONTROL IN A MOTOR VEHICLE DRIVE SYSTEM

Gerhard Heess, Stuttgart; Manfred Schwab, Gerlingen, and Walter Stroh, Cleebronn, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 30, 1979, Ser. No. 89,465
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1978, 2848624
Int. Cl.³ B60K *41/08*
U.S. Cl. 74—858 **14 Claims**



10. In a drive system having an internal combustion engine and transmission means operative in a plurality of operator selectable gear ratios, apparatus for decreasing jolt during gear shift operations, comprising

means for sensing the speed of said internal combustion engine and furnishing an initial speed signal corresponding thereto;

means for furnishing an initiating speed signal and an end speed signal in response to said initial speed signal, said initiating and end speed signals respectively signifying a desired engine speed for initiating and ending jolt control;

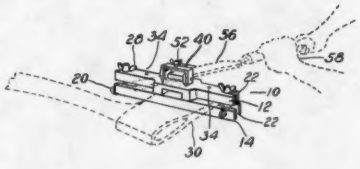
and means for decreasing the torque of said internal combustion engine from the time said speed of said engine corresponds to said initiating speed and until the time said speed of said engine corresponds to said end speed.

4,266,448

AXE SHARPENING DEVICE

James Alderman, P.O. Box 324, Kellogg, Id. 83837

Filed Nov. 27, 1978, Ser. No. 963,727
Int. Cl.³ B21K *11/10*
U.S. Cl. 76—82 **1 Claim**



1. An axe head sharpening device comprising:

a clamp composed of an upper and a lower plate adapted to receive said head therebetween;

resilient strips on said plates adapted to contact and grip said head;

tightening means for securing said plates on said head;

a guide for a file;

said guide being mounted on said upper plate for substantially universal movement about said plate;

wherein said plates have slots at one end thereof;

said tightening means consisting of eye-bolts at each extremity of said plates;

one of said eye-bolts having its eye pivoted in said slot of said lower plate whereby said eye-bolt is able to pivot into and out of said slots to allow entry of said axe head between said plates; and

wherein the other of said eye-bolts has its eye bent perpendicular to and below said lower plate to serve as means for attaching the device to a belt for storage.

4,266,449

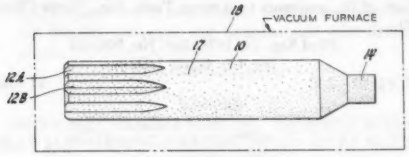
METHOD FOR MAKING A CUTTING TOOL

Robert A. Bielby, 30328 Fink, Farmington, Mich. 48024

Continuation-in-part of Ser. No. 895,296, Apr. 11, 1978, abandoned. This application Oct. 22, 1979, Ser. No. 87,251

Int. Cl.³ B21K *5/04*

U.S. Cl. 76—101 A **10 Claims**



1. A method for making a cutting tool comprising the steps of:

forming a metal cutting tool blank;

depositing on the surface of said blank in a vapor deposition chamber a high hardness coating of a first thickness;

heat treating the coated blank in a vacuum furnace; and

removing metal and a portion of said high hardness coating from said blank to form a cutting edge bordering a portion of said blank in which the high hardness coating of said first thickness remains thereon.

4,266,450

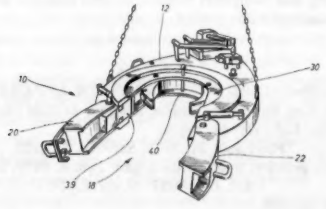
POWER TONG ASSEMBLY

Garth M. Farr, Kingwood, Tex., and Terence D. McCoy, Edmonton, Canada, assignors to Farr Oil Tool, Inc., Houston, Tex.

Filed Jan. 26, 1979, Ser. No. 6,904

Int. Cl.³ B25B *13/50*

U.S. Cl. 81—57.33 **7 Claims**



1. In a power tong of the type having upper and lower cage plates for carrying the pipe-engaging jaws of the tong, the cage plates being mounted for rotation whereby at least one of the cage plates opposes an opposing tong body plate to define a bearing surface therebetween, the IMPROVEMENT comprising:

a continuous arcuate groove in said at least one cage plate, said arcuate groove opening toward the opposing body plate and defining inner and outer arcuate walls and a base wall;

a plurality of guide roller assemblies associated with the arcuate groove and being mounted by the opposing body plate, each said guide roller assembly comprising a guide roller for residing within the groove and a substantially vertical shaft secured to the opposing body plate for rotatably mounting its respective guide roller, whereby the guide rollers guide the rotation of said at least one cage plate by engagement with said groove inner and outer arcuate walls; and

a plurality of weight relief roller assemblies associated with said at least one cage plate and being mounted by the opposing body plate, each said weight relief roller assembly comprising a weight relief roller for residing within the groove and a substantially horizontal shaft mounted by the opposing body plate for rotatably mounting its respective weight relief roller, whereby the weight relief rollers relieve at least a portion of the force between said at least one cage plate and its opposing body plate by riding on the groove base wall.

4,266,451

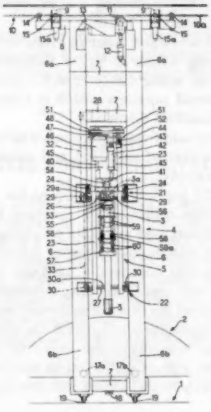
AUTOMATIC DEVICE FOR SCREWING AND HANDLING BOLTS

Georges Boudet, Tours, and Jean C. Desmoulins, Conflans Ste Honorine, both of France, assignors to SKF Compagnie d'Applications Mecaniques, France

Filed Jan. 23, 1979, Ser. No. 5,753

Int. Cl.² B25B *13/50*

U.S. Cl. 81—57.35 **11 Claims**



1. Apparatus for automatic screwing and handling of bolts comprising:

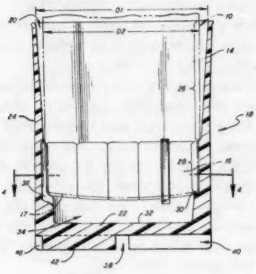
a horizontally mounted guide rail;

a main chassis suspended from said guide rail and including first drive means for moving said main chassis horizontally along said guide rail;

a secondary chassis movably mounted on said main chassis and including second drive means for moving said secondary chassis horizontally relative to said main chassis and at substantially a right angle with respect to the direction of movement of said main chassis along said guide rail; and

a screwing mechanism movably mounted on said secondary chassis and including a first gripping device for gripping a bolt, third drive means for moving said first gripping device vertically relative to said main chassis, and means for rotating said first gripping device about its vertical axis.

4,266,452
OIL FILTER WRENCH
Robert M. Crist, R.D. 4, Oswego, N.Y. 13126
Filed Jan. 14, 1980, Ser. No. 111,608
Int. Cl.³ B25B *13/06*
U.S. Cl. 81—121 R 8 Claims



1. A special purpose tool for installation and removal of cannister oil filters of the type having an external configuration which is cylindrical for a first portion of its length and polygonal for a second portion, said cylindrical portion having a predetermined diameter, and said first and second cannister portions having predetermined lengths, said tool comprising:

(a) a peripherally contiguous side wall having an internal cross section which is circular for a first portion of its length extending from an open end to a second portion having an internal cross section of polygonal configuration substantially matching the external configuration of said cannister second portion;

(b) said wall first portion tapering from an inside diameter at said open end which is larger than said predetermined diameter to an inside diameter at the juncture of said wall first and second portions which is substantially equal to said predetermined diameter;

(c) the length of said first and second wall portions being not greater than that of said first and second cannister portions, respectively;

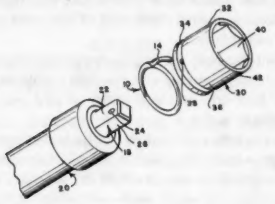
(d) an inwardly extending portion at the end of said wall second portion opposite the juncture thereof with said wall first portion, said inwardly extending portion limiting the extent to which said cannister second portion may be inserted into said wall second portion; and

(e) secondary wall means defining a reservoir on the side of said wall second portion opposite said inwardly extending portion and communicating with the interior of said wall first portion, whereby when said tool is held with said open end up, any oil received in said wall first portion through said open end drains into and is captured by said reservoir.

4,266,453
SOCKET RETAINING RING
D. Gray Farley, 5803 Holmby Ct., Cypress, Calif. 90638
Filed Apr. 16, 1979, Ser. No. 30,214
Int. Cl.³ B25B *13/00*
U.S. Cl. 81—177 G 8 Claims

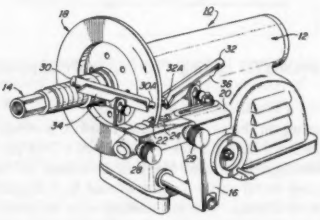
1. A retainer ring to retain power driven sockets to a plug end of a shaft by a pinned interconnection wherein said socket has a receiving hole for said plug end, said plug end and hole have mated and cooperative flat surfaces for rotational interconnection, said plug end has a radial bore and said socket has two opposite radial bores to align with the radial bore of said plug and to receive a retaining pin for their axial interconnection with a peripheral groove for O-ring pin retainers which comprises:

a one-piece, molded elastomeric O-ring of a diameter to seat in the peripheral groove of said socket and an integrally molded elastomeric diametric pin means dependent from the inside and extending across the majority of the span of



said O-ring and received in said radial bore of said plug and both said aligned bores of said socket.

4,266,454
METHOD AND APPARATUS FOR DAMPENING VIBRATIONS DURING TURNING OF A ROTOR
Wallace F. Mitchell, Mettawa, and Arthur Kamin, Lake Villa, both of Ill., assignors to Ammco Tools, Inc., North Chicago, Ill.
Filed Sep. 21, 1978, Ser. No. 944,410
Int. Cl.³ B23B *1/00*
U.S. Cl. 82—1 C 11 Claims



4. A method of dampening vibrations in a rotating disc, comprising

positioning a track adjacent one face of said disc with said track inclined downwardly toward said disc, and

disposing a dampener member for free sliding movement along said track,

whereby vibrational forces developed in said disc are dampened by said dampener member.

5. The method according to claim 4

wherein the method is carried out while said disc is being machined by a tool bit, comprising

causing said dampener member to abut said disc in proximity to said tool bit.

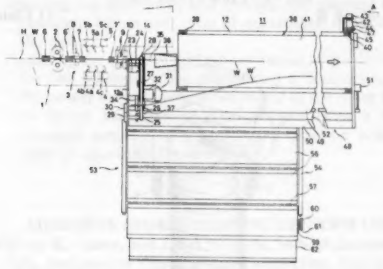
4,266,455
LONG-SIZED WIRE TRANSFER APPARATUS
Hitoshi Ago, Kawanishi, Japan, assignor to Shin Meiwa Industry Co., Ltd., Hyogo, Japan
Filed Jan. 31, 1980, Ser. No. 117,101
Claims priority, application Japan, Feb. 8, 1979, 54-14016
Int. Cl.³ B21F *11/00, 23/00*
U.S. Cl. 83—84 21 Claims

1. A long-sized wire tranfer apparatus, comprising:

a wire clamping transfer conveyor for clamping the vicinity of the terminal end of a cut wire length as cut into a predetermined length and withdrawn in the length direction thereof and for transferring said cut wire length in the direction at the right angle with respect to the wire withdrawing line and substantially in a lateral direction,

a wire drift conveyor arranged to extend along said wire withdrawing line with a predetermined width in the cut wire length withdrawing direction of said wire clamping

transfer conveyor with the terminal end of a transfer path of said wire clamping transfer conveyor left, and having a transferring surface which is substantially horizontal and moves in said cut wire length withdrawing direction, and



wire collecting means disposed at the downstream side of said terminal end of said transfer path of said wire clamping transfer conveyor and adjacent said wire drift conveyor.

4,266,456

DRIVE MECHANISM FOR THE RECIPROCATING MEAT SUPPORTING CARRIAGE OF A MEAT SLICING MACHINE

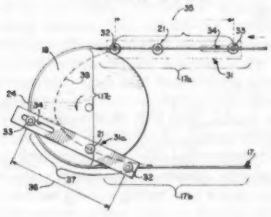
Johannes M. Oostvogels, Delft, Netherlands, assignor to Maatschappij van Berkel's Patent N.V., Leidschendam, Netherlands

Filed Dec. 10, 1979, Ser. No. 101,881

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1978, 2855601

Int. Cl.³ B26D *4/30*

U.S. Cl. 83—731 **10 Claims**



1. In a meat slicing machine including a power driven slicing knife, a reciprocably mounted carriage for supporting meat to be sliced, a driven bar connected to said carriage having a drive slot extending perpendicular to the movement of said carriage, and means engaging said drive slot for reciprocably driving said carriage relative said knife through cutting and return strokes, the improvement in said reciprocable drive means which includes an endless belt trained over longitudinally spaced apart pulleys defining upper and lower horizontal belt runs between the pulleys, means driving at least one of said pulleys, a drive member connected to said belt and having a driving lug mounted intermediate the ends thereof and in substantial alignment with said belt during movement along the horizontal belt runs, said lug slidably engaging said drive slot, and means connecting the ends of said drive member to said belt such that while the connected ends of the drive member traverse a pulley the path of the lug between the horizontal runs is substantially longer than each path of the connected ends of the drive member thereby decreasing the acceleration of the lug and carriage at the ends of the cutting and return strokes.

4,266,457

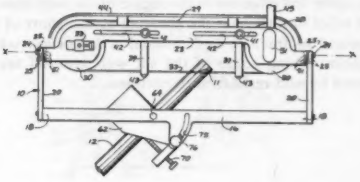
COPE CUTTER

Robert A. Balch, 2616 SW. Stanley Ct., Portland, Oreg. 97219, and Charles E. Kerr, Hillsboro, Oreg., assignors to Robert A. Balch, Portland, Oreg.

Filed Nov. 13, 1979, Ser. No. 93,843

Int. Cl.³ B23D *53/04*

U.S. Cl. 83—745 **11 Claims**



1. A cutter for forming an arcuate cope on a workpiece, comprising:

an elongated support frame;

brackets located at opposite ends of the support frame and extending to one side thereof;

a saw frame mounted to the brackets for pivotal movement about a first axis on the one side of the support frame;

a band saw on the saw frame having a saw blade with its cutting flight arranged parallel to the first axis; and

clamp means pivotally mounted to the support frame intermediate the brackets about a second axis perpendicular to the first axis, for centering a workpiece in a plane parallel to the first axis, with the workpiece projecting to the one side of the support frame and physically intersecting the pivotal path of the band saw cutting flight about said first axis.

4,266,458

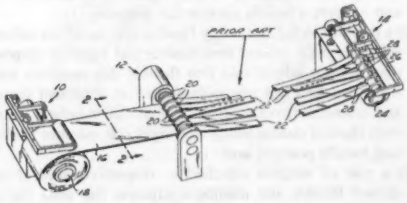
SLITTING CUTTER FOR PARTIALLY SLITTING SHEET METAL WEB

John W. Rogers, 25550 Chagrin Blvd., Cleveland, Ohio 44122

Continuation-in-part of Ser. No. 878,208, Feb. 16, 1978, abandoned, which is a continuation-in-part of Ser. No. 819,450, Jul. 27, 1977, abandoned, which is a division of Ser. No. 713,599, Aug. 12, 1976, Pat. No. 4,170,691, which is a continuation-in-part of Ser. No. 648,533, Jan. 12, 1976, abandoned, which is a continuation-in-part of Ser. No. 612,275, Sep. 11, 1975, abandoned. This application Jun. 6, 1979, Ser. No. 45,910

Int. Cl.³ B23D *19/04*

U.S. Cl. 83—864 **22 Claims**



1. In slitting apparatus having cooperating pairs of rotary slitting cutters defined by generally circular cutter bodies adapted to be rotatively driven, the outer periphery of each of said bodies defining mutually cooperating slitting edges engaging the opposite faces of an elongated web of sheet metal to

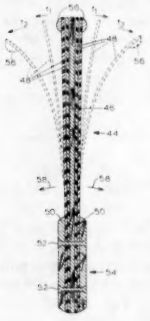
impose a shearing action on the web material which progresses therethrough to an extent sufficient to effect severance of the residual portion of said material by fracture thereof, the improvement comprising at least one of said rotary cutters in each of said pairs containing a relief in its cutting edge, the radial depth of said pairs containing a relief in its cutting edge, the radial depth of said relief being less than the thickness of the sheet metal web to be cut, and the edges defining the relief about its complete periphery being operative to shear the metal web thereby cooperating with the circular periphery of th cutter to form an uninterrupted slitting edge capable of penetrating the web continuously throughout the full rotation of the cutter but effective in the region of the web operated on by the relief to terminate the shearing action short of the extent required to fracture said residual web portion whereby the adjacent facing edges of the slit web material are interconnected by said residual web portion.

4,266,459

ASYNCHRONOUS SLAPPING MUSICAL INSTRUMENT

Daniel W. Seregely, 2432 22nd St., Santa Monica, Calif. 90405

Filed Aug. 3, 1979, Ser. No. 63,424
Int. Cl.³ G10D *13/06*
U.S. Cl. 84—402 **1 Claim**



1. A musical instrument for producing asynchronous slapping sounds comprising:

(a) a rigid slat member;

(b) a pair of first resiliently flexible slat members disposed one on each side of said rigid slat member close adjacent thereto and connected to said rigid slat member on one end to form a handle portion for gripping;

(c) a pair of second resiliently flexible slat members substantially identical to said first flexible slat member disposed one on each side of said first flexible slat members away from said first slat members and close adjacaent thereto and connected to said first flexible slat members on the ends thereof connected to said rigid slat member to form said handle portion; and

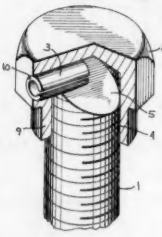
(d) a pair of weights attached to respective ones of said second flexible slat members adjacent the ends thereof opposite said handle portion whereby said first and second flexible slat members flex unequally in response to equal swinging forces imparted to said handle to thereafter unflex and to strike said rigid slat member at times delayed from one another sufficient to create an audibly distinguishable asynchronous slapping sound.

4,266,460

MULTIPLE PIECE BOLT-TYPE FASTENER

Jerome R. Klimowicz, 3827 W. LeGrande Blvd. 103 N., Mequon, Wis. 53092

Filed Jun. 11, 1979, Ser. No. 47,268
Int. Cl.³ F16B *23/00, 35/00*
U.S. Cl. 85—9 R **11 Claims**



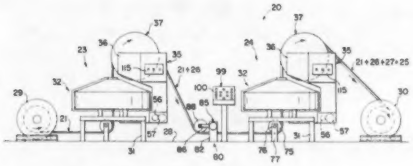
1. A bolt-type fastening unit, comprising a threaded shank having an offset end surface defining a substantially inclined end of the shank, a drive head threaded onto said shank, said head having at least one lateral opening through the side wall spaced from the opening of said head, said opening extending across and outwardly of said offset end surface, and an interlocking means fixedly extending through said opening into overlying engagement with said offset end surface to interlock the head to the shank and transmit the turning force applied to the head to the offset end surface of the shank.

4,266,461

TANDEM BRAIDING SYSTEM AND COMPONENTS THEREOF

Thomas J. Molitors, Akron, Ohio, assignor to Karg Corporation, Tallmadge, Ohio

Filed Jul. 5, 1979, Ser. No. 54,925
Int. Cl.³ D04C *3/12*
U.S. Cl. 87—29 **7 Claims**



4. A system for the control of tandem braiding machines to cover a flexible core element with layers of braided reinforcing strands during successive passes through the braiding mechanisms of the machines, each machine having a powered rotating braiding mechanism and a powered revolving capstan drum for moving said core element coaxially through the braiding mechanism, comprising:

powering said braiding mechanism and said capstan drum of each machine from a single variable speed drive motor;

proportionally controlling the power output from each said drive motor to determine a specific braid angle for each layer of reinforcing strands;

establishing the parameters of a chorded festoon extending laterally between first and second machines and the extent of a vertically oriented zone of operational tolerance for lateral movement of said core element with a first layer of reinforcing strands thereon from said first machine toward said second machine;

moving said core element to pass through said braiding mechanism of the first machine and to pass through said

braiding mechanism of the second machine by concurrent operation of the drive motor of each machine;

continuously monitoring the position of said moving core element at any point within the parameters of said chorded festoon;

detecting any position of said moving core element which is changing within said zone of operational tolerance; and, thereafter,

regulating the speed of said power output of the drive motor for one machine while maintaining a constant speed for the power output of the drive motor of the other machine to return said moving core element from a detected changed position to a preselected position within said zone of operational tolerance.

4,266,462

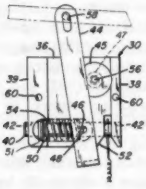
AIRBORNE STORES ARMING TRIGGER UNIT

William R. Carter, and Larry G. Ellis, both of Jamestown, N. Dak., assignors to Western Gear Corporation, Jamestown, N. Dak.

Filed Jan. 22, 1979, Ser. No. 5,476

Int. Cl.³ F41F *5/02*

U.S. Cl. 89—1.5 D **10 Claims**



1. An airborne stores arming trigger unit of the type adapted to be carried by the structure of a military aircraft and operable to selectively carry a connecting means which maintains the final arming means of a bomb inoperative until withdrawn therefrom, comprising: a body member; actuatable trigger means carried by said body member for selectively retaining such connecting means; first selectively actuatable release means cooperable with said trigger means; second selectively actuatable release means carried by said body member and selectively cooperable with said first release means, said second release meansbeing selectively actuatable independently of said first release means; said first and second release means being cooperable such that upon actuation of only said first release means, said trigger means releases the retention thereof of such connecting means and that upon actuation of both of said first and second release means, said trigger means remains unactuated and maintains the support thereof of said connecting means.

4,266,463

FIRE CONTROL DEVICE

Malte Saltin, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Sweden

Filed Dec. 29, 1978, Ser. No. 974,591

Claims priority, application Sweden, Jan. 18, 1978, 7800577

Int. Cl.³ F41G *3/14*

U.S. Cl. 89—41 AA **10 Claims**

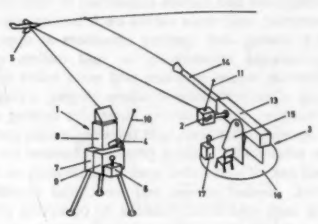
1. A fire control assembly for aiming of at least one weapon such that a projectile fired along a line-of fire of said weapon intercepts a target moving relative to said at least one weapon, and comprising:

first means spaced from said at least one weapon and having a tracking means for tracking said moving target and also ranging means for determining the distance between said moving target and said first means;

control means responsive to said tracking means and said ranging means for generating at least one command signal representative of the line-of-sight of said tracking means to the target and also of the distance between said target and said first means;

a sighting device mounted for joint movement with said at least one weapon and having a sighting means for tracking said moving target in a field-of-view of said sighting device;

said first means and said sighting device being positioned sufficiently close to one another so as to substantially eliminate the parallax effect therebetween;



said sighting device further including a sighting assembly providing an adjustable line-of-sight within the field-of-view of said sighting device; and

means for adjusting the line-of-sight of said sighting device in response to said command signal;

whereby said signal generated by said control means varies the line-of-sight of said sighting device such that the aiming of said weapon to cause said line-of-sight of said sighting device to impinge upon the target causes the weapon's line-of-fire to intercept the projected position of the moving target.

4,266,464

HYDRAULIC CONTROL APPARATUS FOR SERVO-MOTOR PARTICULARLY FOR VEHICLE STEERING

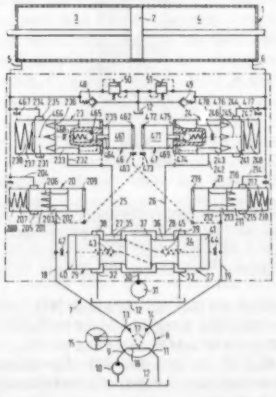
Johannes V. Baatrup, Sonderborg; Thorkild Christensen, Nordborg; Tage Christiansen, Nordborg, and Svend E. Thomsen, Nordborg, all of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Jun. 5, 1978, Ser. No. 912,209

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1977, 2728004

Int. Cl.³ F15B *13/042*

U.S. Cl. 91—29 **6 Claims**



1. Hydraulic steering apparatus comprising a servomotor, control circuit means including a quantity setting device and

two parallel arranged one way control valves, said one way control valves having inlet connections connected to said setting device and outlet connections connected to opposite sides of said servomotor, said control valves being operable to open or close in dependence upon the presence or absence of fluid pressure at said inlets thereof, a power circuit having a pressure regulating device and two parallel arranged main valves, said pressure regulating device having an inlet connection connectable to a power source and dual outlet connections, said main valves having inlets connected to said dual outlet connections and outlets connected to opposite sides of said servomotor, said main valves each having piston means with valve closing and opening chambers at opposite ends thereof connected respectively to said outlets and inlets thereof, throttle means between said main valve outlets and said closing chambers thereof, valve closing springs in said closing chambers, dual resetting means for biasing said main valves in opening directions, said resetting means each including piston means with a third pressure chamber on one side thereof and one of said valve opening chambers on the other side thereof, conduit means and associated throttle means connecting each said third chamber to operating pressure in said control circuit means from the opposite side of said apparatus, switching valve and throttle means in the piston means of each said main valves between said opening and closing chambers thereof, said resetting means being each responsive to the opposite side operating pressure for opening each of said switching valves when the associated said main valve thereof is in the return flow branch of said apparatus.

4,266,465

PERCUSSION MECHANISM

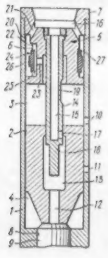
Viktor A. Gaun, ulitsa Gogolya, 21a, kv. 14; Anatoly V. Belousov, prospekt K. Marxa, 55, kv. 56; Vadim D. Petukhov, ulitsa Kropotkina, 127, kv. 493; Gennady I. Suxov, ulitsa Sovetskaya, 47, kv. 22; Nikolai A. Belyaev, ulitsa Petukhova, 114, kv. 11; Vitaly K. Alyabiev, ulitsa Udarnaya, 29, kv. 105, and Klimenty E. Rassomakhin, ulitsa B. Bogatkova, 163/8, kv. 100, all of Novosibirsk, U.S.S.R.

Division of Ser. No. 811,836, Jun. 30, 1977, Pat. No. 4,194,435. This application Jul. 2, 1979, Ser. No. 54,307

Claims priority, application U.S.S.R., Jul. 7, 1976, 2391708

Int. Cl.³ F01L *21/02*

U.S. Cl. 91—234 **6 Claims**



1. A percussion mechanism particularly suitable for a hand-operated percussion tool actuated by a pressurized fluid supplied from a source of pressurized fluid, comprising a housing **(81)** with an internal cylindrical space and exhaust ports **(87,88)**;

a fluid actuated piston **(84)**, having a head **(91)**, a tail **(92)** and a blind bore **(93)** and being positioned for axial reciprocation in said space of said housing and dividing said space into a working stroke chamber **(85)** of a variable volume and an idle stroke chamber **(86)** of a variable volume, and each of said chambers communicating with one of said exhaust ports;

a fluid distributing means **(82)** having a central bore **(97)** and being cooperatively associated with pressure responsive surfaces **(103)** of a resilient valve element for defining inlet passages **(104)** for the admission of fluid to the working stroke chamber **(85)** of the mechanism;

a closure **(83)** having inlet means for said housing **(81)** defining with said fluid distributing means **(82)** a supply space **(92)** for receiving said pressurized fluid from a said source;

the tail of said fluid actuated piston being received in said central bore of said fluid distributing means, and passages **(94, 99)**, respectively, located in said tail and said fluid distributing means for directing said pressurized fluid from said supply space to said blind bore **(93)**;

said fluid distributing means having radial bores **(102)** and passageways **(100)**, said passageways **(100)** connecting said working stroke chamber **(85)** with said central bore **(97)**, and the passageways **(100)** and the radial bores **(102)** connecting the working stroke chamber **(85)** to the inlet passages **(104)**;

a work performing member **(90)** accommodated in said housing **(81)** to receive impacts from said piston **(84)** reciprocated by the action of the fluid;

said pressure responsive surfaces **(103)** of said resilient valve element being disposed about said fluid distributing means **(82)**; valve seats provided in a surface of said fluid distributing means, their number equalling to the number of radial bores **(102)** of said fluid distributing means;

said resilient valve element **(103)** being stretched tight about the surface of said fluid distributing means **(82)** in opposition to said radial bores **(102)** and encircling said fluid distributing means for a portion of its periphery, the internal surfaces of said resilient valve element **(103)** with the valve seats defining said inlet passages **(104)** for controlling fluid flow about said fluid distributing means **(82)**, whereby said piston is repeatedly up and down in said housing by the action of said fluid flowing into and out of said chambers and said exhaust ports via said inlet means and said radial bores.

4,266,466

HYDRAULIC VALVE DEVICE

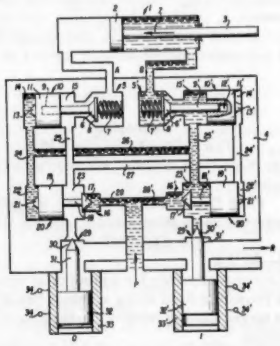
Horst Ziems, Harsewinkel, Fed. Rep. of Germany, assignor to The Claas OGH, Harsewinkel, Fed. Rep. of Germany

Filed Nov. 30, 1977, Ser. No. 855,865

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1976, 2654366

Int. Cl.³ F15B *13/042*

U.S. Cl. 91—420 **13 Claims**



1. A hydraulic valve control device and servomotor system comprising:

a first fluid passageway assembly having a first end portion in joint fluid communication with a source of pressurized fluid and an exhaust passageway of a fluid reservoir or the like;

said first fluid passageway assembly having a second end portion in fluid communication with one of two chambers formed end to end within a servomotor housing, said chambers being separated from one another by a piston slidably mounted within said housing;

a second fluid passageway also having a first end portion in joint fluid communication with a source of pressurized fluid and an exhaust passageway of said fluid reservoir or the like;

said second fluid passageway assembly also having a second end portion in fluid communication with a remaining one of said two chambers formed within said servomotor housing;

said first fluid passageway assembly further including an intermediate portion forming a fluid passageway between said first and second end portions of said first fluid passageway assembly, respectively, with said intermediate portion also in fluid communication with a first end portion of each of a first and second separate fluid chambers;

said second fluid passageway assembly further including an intermediate portion forming a fluid passageway between said first and second end portions of said second fluid passageway assembly, respectively, with said intermediate portion also in fluid communication with a first end portion of each of a third and fourth separate fluid chambers;

a first conduit assembly providing a fluid-tight passageway between said intermediate portion of said second fluid passageway assembly and a second end portion of each of said first and second fluid chambers, respectively, and a second conduit assembly providing a fluid-tight passageway between said intermediate portion of said first fluid passageway assembly and a second end portion of each of said third and fourth fluid chambers, with each of said first, second, third and fourth chambers including a separate slidable piston member providing a fluid-tight seal between said first and second end portions respectively,

said piston member in each of said first and third chambers controlling a normally open input valve means, said piston member in each of said second and fourth chambers controlling a normally closed back pressure valve means,

separate normally open exhaust valve means positioned adjacent each fluid passageway assembly for selectively blocking a portion of a respective fluid passageway joining an exhaust passageway to prevent pressurized fluid from flowing directly into said exhaust passageway;

whereupon selective actuation of one of said separate exhaust valve means results in blockage of the flow of fluid from one fluid passageway assembly into an attached exhaust passageway, causing pressurized fluid to flow through said one fluid passageway assembly and into a chamber of said servomotor, said pressurized fluid also flowing into the end portions of both said fluid chambers joining said remaining fluid passageway assembly to moveably actuate the slidable pistons located therein, with one of said slidable pistons biasing an attached normally open input valve means into contact with said first end portion to block the flow of pressurized fluid into said remaining fluid passageway assembly and the further slidable piston engaging and moveably biasing a normally closed back pressure valve means out of contact with a second end portion of said remaining fluid passageway assembly to allow fluid to flow from a remaining chamber of said servomotor, through said remaining fluid passageway assembly and into a remaining attached exhaust passageway.

4,266,467

DIFFERENTIAL PRESSURE LIMITING VALVE

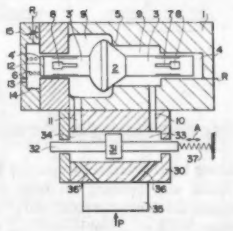
Guenter Keller, Modautal; Andreas Pohl, Pfungstadt, and Gerhard Hintz, Ober-Ramstadt, all of Fed. Rep. of Germany, assignors to Carl Schenck AG, Darmstadt, Fed. Rep. of Germany

Filed Oct. 16, 1978, Ser. No. 951,721

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1977, 2748107

Int. Cl.³ F15B *13/042*

U.S. Cl. 91—437 **11 Claims**



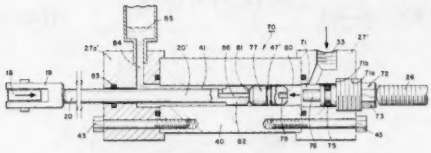
1. A hydraulic circuit arrangement for limiting a differential pressure, comprising cylinder means and a double acting piston means operatively arranged in said cylinder means forming two cylinder chambers one on each side of said piston means, first source means for effecting a differential pressure across said double acting piston means, a casing means, cavity means in said valve casing means, valve plug means in said cavity means, first and second pressure media port means in said valve casing means and communicating with said cavity means and said two cylinder chambers for subjecting said valve plug means to a first pressure on one side thereof and to a second pressure on the opposite side to thereby establish said differential pressure, bearing bore means arranged in axial alignment in said valve casing means, valve seat means located in said valve casing means intermediate said bearing bore means, said pressure media port means being located on opposite sides of said valve seat means for admitting pressure media into said cavity means which establish said differential pressure across said valve seat means, said valve plug means being operatively arranged in said valve casing means for cooperation with said valve seat means, said valve plug means comprising a valve closure body having substantially the same effective surface areas on both sides of said valve seat means and two bearing shafts extending from two opposite sides of said valve closure body, said two bearing shafts having a common longitudinal axis, said bearing shafts being axially slidable in said bearing bore means, substantially without being exposed to the effect of said differential pressure, one of said bearing shafts (**3'**) being arranged opposite of said valve seat means (**5**) and having axially outwardly facing control surface means (**12**), said arrangement further comprising second source means including adjustable fluid control pressure applying means (**13**) operatively arranged to fluid bias said one control surface means (**12**) of said one bearing shaft (**3'**) toward the valve seat means, whereby said valve closure body (**2**) is exposable to said differential pressure through said pressure media port means and to said control pressure through said control pressure applying means and through said one bearing shaft for limiting the build-up of a differential pressure in one flow direction relative to said valve seat means and for permitting the build-up of a differential pressure in the opposite flow direction.

4,266,468

CONTROL CYLINDER WITH REMOVABLE PISTON

Paul G. Biggs, 10200 De Soto #306, Chatsworth, Calif. 91311

Filed Apr. 26, 1979, Ser. No. 33,360
Int. Cl.[3] F01B *7/00, 31/10;* F16J *1/10*
U.S. Cl. 92—63 1 Claim



1. A control cylinder having an axial bore extending therethrough,

a high-pressure head detachably coupled to the front end of said cylinder and defining an inlet port for admitting high-pressure fluid into the front end of said cylinder bore,

a low-pressure head detachably coupled to the rear end of said cylinder,

a shaft having an enlarged front end, slidably mounted in said cylinder bore, and a rear end sealingly extending outwardly through the center of said low-pressure head,

a free-floating power piston having front and rear faces and being slidably and sealingly mounted in said cylinder bore between said enlarged front end of said shaft and said high-pressure head, said enlarged front end being detached from the rear face of said power piston,

a movable force-transmitting control member coupled to the rear end of said shaft for exerting an axial force against said shaft,

said high-pressure head having a threaded center hole,

a plug unit threadedly coupled to said center hole,

said power piston being removable from said cylinder bore through said threaded hole,

said enlarged front end defining an axial channel in fluid communication with said cylinder bore, and

said cylinder bore being coupled to a source of lubricating fluid.

4,266,469

METHOD FOR MAKING SACKS PROVIDED WITH CROSS-BOTTOMS

Richard Feldkämper, Lengerich of Westphalia, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Mar. 14, 1979, Ser. No. 20,465
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1978, 2811857
Int. Cl.[3] B31B *1/62, 1/84*
U.S. Cl. 493—219 8 Claims

1. A method of making sacks provided with cross-bottoms comprising:

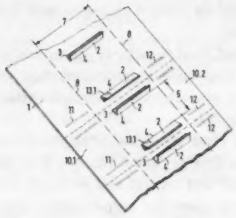
folding over side portions of a web of material so that margins of the side portions overlap and the web forms a flattened tubular web;

interconnecting the overlapping margins with a longitudinal seam;

severing individual tube sections from the tubular web;

forming a base for an individual tube section by inwardly folding opposed portions of the bottom of the tube section to define triangular-shaped corner folds having parallel bases spaced from each other with corresponding ends of the parallel bases defining side flaps, folding inwardly the side flaps so that a portion of one side flap overlaps a portion of the other, and interconnecting the overlapping portions of the side flaps to each other; and

applying a label folded along a fold line to a central portion of the web of material prior to the folding of the side portions thereof, the label after formation of the base of an individual tube section defining an internal lock, securing



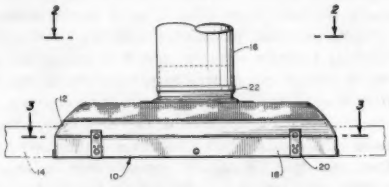
the label to the central portion of the web of material prior to folding over of the side portions and securing the label to the side portions after folding thereof, the label having a length sufficient to cover the space between the parallel bases of the corner folds and being applied to the web of material in a position to at least partially close the space after formation of the base of the individual tube section.

4,266,470

UNIVERSAL AIR DIFFUSER

Clifford A. Schroeder, Westlake; Ralph L. Fogg, Chatsworth; Harry J. Farason, West Covina, and Robert E. Voorhees, Van Nuys, all of Calif., assignors to C. A. Schroeder Inc., San Fernando, Calif.

Filed Oct. 24, 1979, Ser. No. 87,916
Int. Cl.[3] F24F *7/00*
U.S. Cl. 98—40 R 8 Claims



1. A method of forming an air diffusing apparatus for connection to an air delivery system comprising:

forming a plenum of densely compacted, somewhat porous fiberglass material having one side open;

covering a substantial portion of the exterior surface of the closed side of said plenum with a thin layer of non-porous material;

securely bonding said non-porous material to said exterior surface with an adhesive;

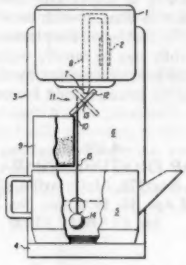
cutting a hole through the closed side of said plenum and said non-porous material to match the duct size of said air delivery system;

inserting a duct connector into said hole;

securing said duct connector to the non-porous covering of said plenum with an adhesive tape;

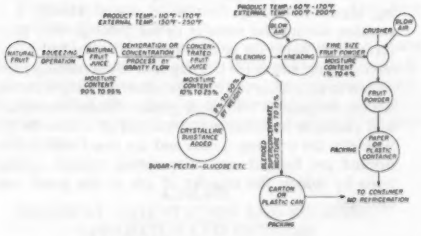
whereby said duct connector will remain secured to said plenum.

4,266,471
TEA MAKER
Lars O. Rosengren, Fagelstigen 5, Huskvarna, Sweden (56100)
Filed Aug. 29, 1978, Ser. No. 937,772
Claims priority, application Sweden, Sep. 5, 1977, 7709925
Int. Cl.³ A47J *31/04*
U.S. Cl. 99—305 **6 Claims**



1. Apparatus for preparing beverages comprising a housing, a water container in said housing, said water container including water heating means and a water discharge conduit, a strainer below said water container for holding a supply of beverage solids, a compartment below said strainer for a beverage collecting vessel, a movable water diverting means for directing water from said water discharge conduit either into said strainer or into a vessel positioned in said compartment, said diverting means being movable between a first position for directing the water from said conduit into said strainer and a second position for directing the water from said conduit into said vessel and control means for moving said diverting means from said first to said second position, said control means including means responsive to the level of water in said vessel for moving said diverting means from said first to said second position.

4,266,472
FRUIT PREPARATION
Lucio Reale, 1827 - 46th St., SE., Calgary, Alberta, Canada (T2B 2J9)
Division of Ser. No. 52,231, Jun. 26, 1979. This application Feb. 8, 1980, Ser. No. 119,868
Int. Cl.³ A23L *2/08, 2/16*
U.S. Cl. 99—483 **14 Claims**



1. In an apparatus for producing a fruit preparation from fruit juice the improvement comprising:

(a) a concentrator comprising a first vessel;

a pivotable mount at about the center of said first vessel;

means to raise and lower an end of the first vessel to reciprocate the first vessel about the pivotable mount;

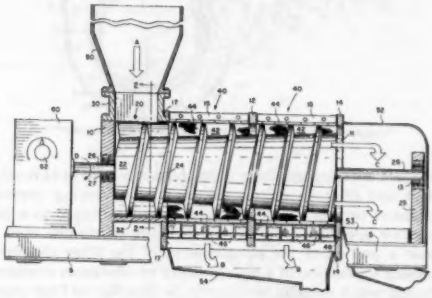
means to heat the first vessel;

a closable outlet at each end of the vessel;

(b) extraction means for vapour produced from the fruit juice heated in said first vessel;

blender means to blend the material produced on the concentrator with an added material.

4,266,473
SCREW PRESS WITH CONTINUOUS SLOPE FEED SCREW
Arthur J. Hunt, and Arthur J. Hunt, Jr., both of 332 N. Halifax Dr., Ormond Beach, Fla. 32704
Filed Aug. 23, 1979, Ser. No. 69,110
Int. Cl.³ B30B *9/16*
U.S. Cl. 100—117 **10 Claims**



1. In a screw press for extracting liquids from wet or slippery materials, said press having an inlet end, an outlet end, a cylindrical cage having filter screen walls, and a base, the improvement comprising:

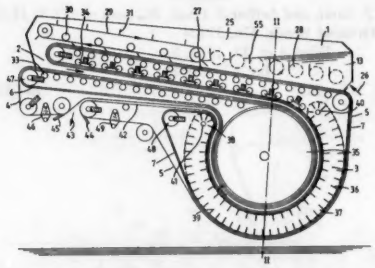
a rotatable feed screw having a body with a sloping frustoconical shape, and a screw thread disposed helically around the surface of said body, the outside diameter of said screw thread having a ratio to the pitch of said frustoconical shape not exceeding two-to-one, said feed screw disposed concentrically in said cylindrical cage and said screw thread having an outside diameter essentially equal to the inside diameter of said cage, the slope of said body selected to provide a gradual reduction in volume of the flights of said screw thread from the inlet end to the outlet end of said screw press to gently and progressively squeeze said materials against said filter screen walls as said materials are fed from said inlet end to said outlet end of said press by rotation of said feed screw;

adjustable drive means attached to said feed screw for rotating said feed screw at a rate which will produce sufficient centrifugal force on the liquids in said materials to increase the amount of extracted liquids from said materials over the amount extracted by such squeezing of said materials.

4,266,474
CHAMBER TYPE FILTER PRESS FOR DE-WATERING SLUDGES AND SIMILAR SUBSTANCES
Albert Bähr, Am Stockfeld 69, D-6680 Neunkirchen-Kohlhof, Fed. Rep. of Germany
Filed Oct. 15, 1979, Ser. No. 84,597
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1978, 2844697
Int. Cl.³ B30B *9/24;* B01D *33/04*
U.S. Cl. 100—118 **72 Claims**

1. A chamber-type filter press for de-watering a water containing substance comprising: a plurality of sequentially disposed fully enclosed filter chambers formed as a continuously advancing belt which are charged and discharged with said substance, said filter chambers being closed on their top and bottom sides by filter bands supported on revolving carrier belts and on their lateral sides with sealing means and at their front and rear, as viewed in the direction of advancement, by

the substance to be de-watered; input means for feeding said substance between said filter bands and sealing means to form said filter chambers; and means for applying a high pressure to said filter chambers to de-water said substance comprising a plurality of pressure applying members which co-advance so as to revolve with and apply pressure to said filter chambers, and a plurality of pressure producers associated with said



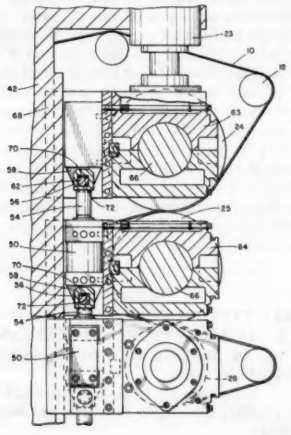
pressure applying members which co-advance so as to revolve with said filter chambers, each said co-advancing pressure producer originating a pressure and transmitting it to a said pressure applying member, said pressure producers, over at least a portion of the advancement of the filter chambers, causing application of a high pressure to substances contained therein which pressure increases in the direction of filter chamber advancement.

4,266,475

POSITIONING MECHANISM FOR CALENDER ROLLS

David E. Lamon, and Paul J. Klemmer, both of Appleton, Wis., assignors to Appleton Machine Company, Appleton, Wis.

Filed Nov. 26, 1979, Ser. No. 97,347
Int. Cl.[3] B30B *3/04, 15/16*
U.S. Cl. 100—168 **7 Claims**



1. A mechanism for vertically positioning a stack of calender rolls relative to a support frame, each roll being mounted to the frame for movement in the vertical direction comprising:

(a) means for lifting and lowering the top roll of said stack,

(b) means for lifting and lowering the bottom roll of said stack,

(c) means for interconnecting the remaining rolls of said stack, one to the other and to said top roll for movement with the latter, said interconnecting means including:

(i) piston and cylinder assemblies associated with each of said remaining rolls,

(ii) a lost motion connecting means for interconnecting said assemblies one to the other and to said top roll,

(d) means for controlling operation of said assemblies to permit or prevent movement of the pistons relative to the cylinders,

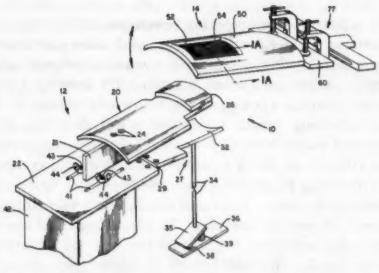
whereby when the pistons are permitted to move the remaining rolls may be sequentially lowered and automatically positioned in contact with each other and said top and bottom rolls, and when the pistons are prevented from moving, the rolls may be rapidly separated, one from the other, by a distance determined by the lost motion connecting means by lowering said bottom roll.

4,266,476

CAP PRINTING APPARATUS

Ferris A. Maloof, Box 778, McCaysville, Ga. 30555

Filed Apr. 16, 1979, Ser. No. 30,635
Int. Cl.[3] B41F *17/00*
U.S. Cl. 101—35 **6 Claims**



1. Apparatus for silk screen printing on curved flexible panels of baseball caps and like objects, said apparatus comprising;

a curved printing platform for supporting a panel of a cap thereon, said platform defining a predetermined curvature;

cap shaping means associated with said platform for causing a flexible panel of a cap supported by said platform to take a curvature conforming to said predetermined curvature of said platform;

a flexible silk screening printing screen;

means for transferring ink through said printing screen to a panel supported on said printing platform;

means for maintaining said printing platform and said printing screen stationary relative to one another in a print position during the transfer of ink through said printing screen to a panel on said printing platform; and

screen shaping means for causing said silk screening printing screen to take a curved configuration defining a curvature which cooperates with said predetermined curvature of said platform to enhance the transfer of ink to the panel, whereby the printing screen and the panel which is to be printed are formed into cooperating curved configurations by which the transfer of ink to the panel can be effected.

4,266,477

MATERIAL ORIENTATION APPARATUS AND METHOD

Michael Ackley, 1273 N. Church St., Moorestown, N.J. 08057

Filed Oct. 24, 1978, Ser. No. 954,243
Int. Cl.[3] B41F *17/36*
U.S. Cl. 101—40 **36 Claims**

1. In an apparatus for capsules which have one end larger than the other, which capsule is to be rectified for delivery to

a conveyor means for further processing and which apparatus includes a hopper adapted to contain a plurality of the capsules in random orientation, the combination which comprises:

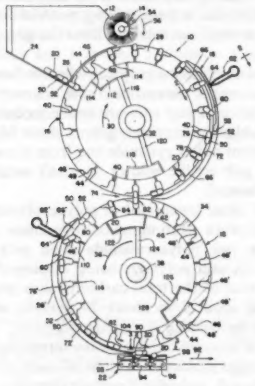
feed drums means in rotary arrangement relative to the hopper to receive capsules from the hopper;

said feed drum means comprising a plurality of peripherally spaced first pockets each adapted to receive one of said capsules therewithin;

said first pockets comprising a radially extending cavity and an intercommunicating longitudinally extending cavity;

first means which cooperates with said drum for selectively reorienting some of the capsules which are radially aligned in said pockets to a longitudinally aligned position within the longitudinally extending portion of the pockets;

transfer drum in substantial tangential rotary association with the feed drum means to receive the longitudinally and radially aligned capsules from the feed drum means;



said transfer drum means comprising a plurality of peripherally spaced second pockets adapted to be rotated into registry with the first pockets to effect capsule transfer therebetween;

said second pockets comprising a longitudinally extended cavity for receiving the capsules in longitudinal orientation and a radially extended cavity for receiving the capsule in radial orientation said transfer drum means further comprising second means which cooperates with said drum for reorienting the capsules which are radially aligned in said pockets to a longitudinally aligned position within the longitudinally extending portion of the pockets;

said first and second reorientation means comprising means for retaining all of said capsules in a plane perpendicular to the rotational axes of said feed and transfer drum means;

whereby all of the capsules are oriented from a random orientation to a longitudinally oriented position for further processing.

4,266,478

MATERIAL ORIENTATION AND PRINTING APPARATUS AND METHOD

E. Michael Ackley, 1273 N. Church St., Moorestown, N.J. 08057

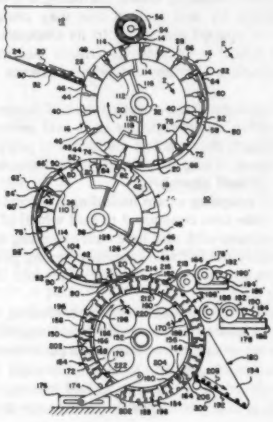
Continuation-in-part of Ser. No. 954,243, Oct. 24, 1978. This application Aug. 9, 1979, Ser. No. 65,337

Int. Cl.[3] **B65G** *47/24;* **B41F** *17/36*

U.S. Cl. 101—40 **42 Claims**

1. An apparatus for receiving in a longitudinal orientation a plurality of materials having a body portion and a cap portion, the cap portion being larger than the body portion, from a transfer drum means for further processing, the materials having been delivered by the transfer drum means in a rectified condition, which apparatus comprises

pocket carrier drum means in rotary arrangement relative to the transfer drum means, to receive the materials from the transfer drum means, the pocket carrier drum means having a plurality of cavities peripherally spaced along its circumference, which cavities contain a plurality of carrier means journalled for rotation within the cavities,



which carrier means include longitudinally aligned pockets for retaining in position the plurality of materials received from the transfer drum means,

means for rotating the carrier means relative to the pocket carrier drum means so that the materials are rotated from the longitudinal position in which they are received by the pocket carrier drum means to a position transverse to the direction of their motion.

4,266,479

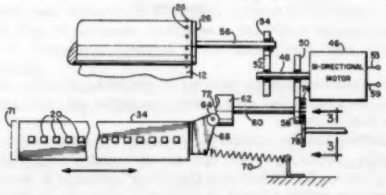
MULTI-FUNCTION MECHANICAL PRINTER DRIVE MEANS

Frank A. Mahoney, Wyncote, Pa., assignor to Sperry Corporation, New York, N.Y.

Continuation of Ser. No. 859,787, Dec. 12, 1977, abandoned. This application Aug. 8, 1979, Ser. No. 64,833

Int. Cl.[3] **B41J** *9/12*

U.S. Cl. 101—93.09 **2 Claims**



1. In a high speed printer including a band having raised characters thereon, means for moving a print receiving medium, means for moving an inking medium, and means for moving as assembly having print hammers thereon, an improvement for selectively actuating one or more of said means for moving comprising:

(a) a bi-directional printed circuit motor for selectively driving a drive shaft in a first or second direction,

(b) first coupling means including a first one-way clutch connected to said drive shaft and having a first output shaft connected to actuate said means for moving said

print receiving medium in response to movement of said first one way clutch each time a full line of print is printed on said print receiving medium,

(c) second coupling means including a second one way clutch connected to said drive shaft for actuating said means for moving said inking ribbon in response to movement of said drive shaft in a second direction after a selected number of lines have been printed on said print receiving medium,

(d) said second coupling means including a wheel disposed to be driven by said second one way clutch having a plurality of spaced pins close to its circumference and a sprocket wheel connected to actuate said inking ribbon with projecting portions extending between said spaced pins,

(e) third coupling means for actuating said means for moving said assembly to periodically shift said assembly having print hammers thereon one character of print in response to movement of said drive shaft in said second direction,

(f) a roller on said assembly,

(g) said third coupling means including a second output shaft having a lobe cam connected to said wheel of said second coupling means with said lobe cam engaging said roller on said assembly to shift said assembly having print hammers thereon each time one half a line is printed on said print receiving medium;

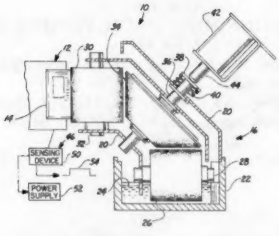
(h) said third coupling means further including an arm connected to a biasing means to shift said assembly in a first direction when said roller is in a first position with respect to said lobe cam and to shift said assembly in a second opposite direction in response to said biasing means when said roller is in a second position with respect to said lobe cam.

4,266,480

APPARATUS FOR CONTROLLING INKING MEANS

John L. Lorenzo, Southbury, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Jul. 20, 1979, Ser. No. 59,347
Int. Cl.³ B41F *31/12, 31/38;* **B41L** *27/40*
U.S. Cl. 101—351 **8 Claims**



1. In a machine having printing cycles and including inking means, apparatus for controlling operation of said inking means comprising:

a. latching means including a manually operable switch;

b. pulse generating means operatively coupled to said latching means for enablement thereby in response to momentary operation of said switch to commence generating pulses;

c. means for counting a predetermined number of said pulses;

d. means for providing an inking enabling signal for a predetermined time interval during at least one of said printing cycles;

e. switching means connected to said pulse generating means and said inking enabling signal means and said counting means for gating said pulses to said counting means during the time interval of said inking enabling signal; and

f. means connected to said pulse generating means for operating said inking means during the time interval said predetermined number of said pulses are being counted.

4,266,481

IMAGE-BEARING LITHOGRAPHIC PLATES WITH DESENSITIZING COATING

Walter L. Garrett, Freeland, and Ralph G. Czerepinski, Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 888,889, Mar. 22, 1978, Pat. No. 4,200,688, which is a division of Ser. No. 763,262, Jan. 27, 1977, Pat. No. 4,186,250, which is a continuation-in-part of Ser. No. 586,455, Jun. 12, 1975, abandoned, which is a continuation-in-part of Ser. No. 565,915, Apr. 7, 1975, abandoned. This application Jun. 29, 1979, Ser. No. 53,634
Int. Cl.³ B41N *1/00, 3/00;* **G03F** *7/02*
U.S. Cl. 101—456 **10 Claims**

1. An image-bearing lithographic printing plate having in the form of a thin coating deposited from solution on the non-image areas of the plate a desensitizing material comprising an active polymer component selected from the group consisting of

(a) a polyacrylamide-based polymer wherein from about 5 to about 70 percent of the carbonyl sites are carboxyl groups and the balance of said sites are amide moieties;

(b) a physical blend comprised of from about 95 to about 30 weight percent polyacrylamide and from about 5 to about 70 percent polyacrylic acid or an alkali metal or ammonium salt thereof;

(c) a physical blend comprised of polyacrylamide, or polyacrylic acid or an alkali metal or ammonium salt thereof, and at least one polyacrylamide-based polymer as described in (a), said polymers being employed in proportions such that of the total carbonyl sites present in the blend, from about 5 to about 70 percent are carboxyl groups and the balance are amide moieties;

(d) a mixture of any two or more of the foregoing (a)–(c); the weight average molecular weight of each of said polyacrylamide-based polymer, polyacrylamide, and polyacrylic acid or salt thereof being in the range of from about 10,000 to about 500,000; and

(e) a co-mixture of one or more of the foregoing (a)–(d) with up to 30 weight percent hydroxypropyl methylcellulose based on the total weight of the co-mixture, said hydroxypropyl methylcellulose being of a type which produces a 2 weight percent solution having a viscosity of from about 1 to about 100 cP when measured according to ASTM Method D 2363-72.

4,266,482

VEHICLE CONVEYOR SYSTEM HAVING DOUBLE CHAIN DRIVE AND SELECTABLE DOLLY

Ivan J. Barber, Toronto, Canada, assignor to The Allen Group, Inc., Melville, N.Y.

Filed Mar. 3, 1978, Ser. No. 883,027
Claims priority, application Canada, Feb. 9, 1978, 296552
Int. Cl.³ B61B *13/12, 10/04*
U.S. Cl. 104—172 B **7 Claims**

1. A conveyor system for transporting a vehicle along a path of travel, comprising:

(a) support means having an upper track for supporting a wheel of said vehicle, a lower track beneath said upper track, and a return portion beneath said lower track;

(b) a pair of parallel laterally spaced endless chains having upper and lower flights, and means mounting said chains with said upper flights, and means mounting said chains with said upper flights adjacent said lower track and with said lower flights adjacent said return portion;

(c) drive means for driving said chains in unison with the upper flights thereof moving downstream along said direction of travel;

(d) a plurality of dollies mounted in spaced relation along

said chains, each dolly comprising, with reference to a dolly positioned on said upper flight;

(i) a front roller assembly comprising a pair of laterally spaced first rollers arranged to roll on said lower track, and axle means extending laterally between said first rollers;

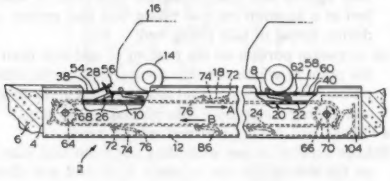
(ii) means mounting said front roller assembly between said chains and with said front roller assembly connected to said chains for movement therewith, with said axle means extending laterally between said chains;

(iii) an arm connected substantially at the center of said axle means and extending longitudinally upstream from said axle means;

(iv) a rear roller assembly mounted at the rear end of said arm and adapted to roll both on said upper track and said lower track, said rear roller assembly including second rollers generally longitudinally aligned with said first rollers;

(e) a ramp having upstream and downstream ends, and means mounting said ramp for movement between a first normal position in which said ramp forms a portion of said lower track and a second position in which the downstream end of said ramp is raised for said ramp to form a path from said lower track to said upper track in a downstream direction;

(f) said upper track having a slot therein above said ramp to



accommodate said raised ramp and to permit said rear roller assembly to move up said ramp onto said upper track;

(g) power means for moving said ramp between said first and second positions;

(h) control means for said power means, said control means comprising:

(i) first normally off switch means mounted downstream of said ramp and responsive to contact by a said vehicle for assuming an on condition;

(ii) second normally off switch means located at said lower track and responsive to movement of a front roller to a position immediately downstream of said ramp for assuming an on condition;

(iii) and means connecting said first and second switch means in series with said power means for operation of said power means when said first and second switch means are both on to raise said downstream end of said ramp for a period of time sufficient to shunt said rear roller assembly to said upper track;

(i) a lid member normally closing said slot, and means connecting said lid member with said power means for said lid member to move upwardly coincident with upward movement of said ramp to expose said slot; and,

(j) and means mounted at said upper track and spaced substantially downstream along said conveyor for directing a rear roller assembly on said upper track back to said lower track.

4,266,483

CONVERTIBLE RAIL-HIGHWAY CAR MOVING VEHICLE

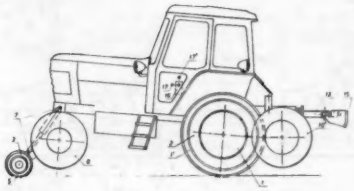
Tapio M. Rannanmaki, Espoo, Finland, assignor to Vaino Tapio Saalasti, Helsinki, Finland

Filed Aug. 13, 1979, Ser. No. 65,964

Claims priority, application Finland, Jan. 26, 1979, 790254

Int. Cl.³ B61D *15/00;* **B61F** *9/00, 13/00;* **B62D** *61/12*

U.S. Cl. 105—26 R **7 Claims**



1. A rail-highway car moving vehicle comprising a tractor having a front end including steerable members and a rear end with a rear axle, a pair of vertically fixed rubber tired wheels connected to said steerable members of said tractor, at least one pair of flanged vertically shiftable wheels fixed to said front end of said tractor, means for raising and lowering said at least one pair front wheels from and to a lowest most position with their respective lowest circumferential point lower than the lowestmost point of the circumferences of said at least one pair of rubber tired wheels, at least one further pair of flanged wheels connected to said rear axle and driven thereby, said at least one further pair of flanged wheels being vertically fixed, at least one further pair of rubber tired wheels connected to said rear end of said tractor, said at least one pair of rubber tired wheels being vertically movable, means for raising and lowering said at least one further pair of rubber tired wheels from and to a lowestmost position with their respective lowestmost circumferential point lower than the lowestmost point of the circumferences of said at least one further pair flanged wheels, and means for supplying power to said at least one further pair of rubber tired wheels when they are in their lowestmost position, whereby while driving on rails, the front end of the tractor is raised and the rear end is lowered, while in terrain driving the front end is lowered and the rear end is raised.

4,266,484

RACK-RAIL ASSEMBLY FOR A MINING MACHINE

Peter Jochums, Essen; Klaus Stratmann, Bochum; Egon Henkel, Essen, and Heinrich Wildfürster, Gelsenkirchen-Buer, all of Fed. Rep. of Germany, assignors to Hauhinco Maschinenfabrik G. Hausherr, Jochums & Co. KG, Essen, Fed. Rep. of Germany

Filed Feb. 8, 1979, Ser. No. 10,534

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1978, 2805799

Int. Cl.³ B61C *11/00;* **E01B** *5/04*

U.S. Cl. 105—29 R **11 Claims**

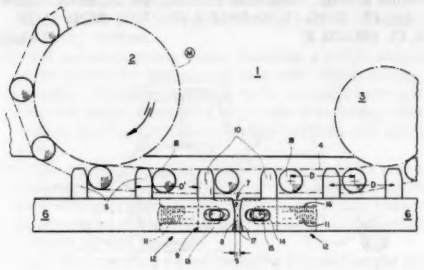
1. A rack-rail assembly comprising:

a pair of elongated and relatively long rail sections longitudinally generally aligned with each other and having respective ends juxtaposed at a joint location;

a relatively short link at said joint location, said link having a pair of end parts and each of said ends having an end part longitudinally overlapping and forming an end-part pair with the respective end part of said link, one of said end parts of each of said end-part pairs being formed with a laterally projecting pin and the other end part of each of said end-part pairs being formed with a recess loosely receiving the respective pin, said pins and recesses to-

gether constituting said means, said sections and link being at least limitedly relatively pivotal about said pins;

means connecting each of said ends to said link at said location for only limited relative longitudinal displacement between said ends and said link; and



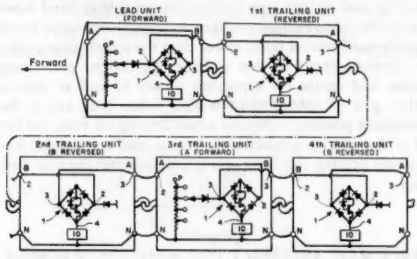
a row of longitudinally substantially equispaced teeth including section teeth on said sections and at least two link teeth on said link.

4,266,485

CONTROL SYSTEM FOR ECONOMIC OPERATION OF MULTIPLE LOCOMOTIVE TRAINS

Frank D. Bruner, and Joseph Kuzela, Jr., both of Omaha, Nebr., assignors to Vapor Corporation, Chicago, Ill.

Filed Aug. 3, 1978, Ser. No. 930,463
Int. Cl.³ H02P *1/58*
U.S. Cl. 105—61 **28 Claims**



1. Apparatus for operating a multiple locomotive consist having lead and trailing locomotive units, in spaced relationship, at economic power levels, comprising:

means pre-determining discreet power operating levels contained in the lead unit, and generating a plurality of predetermined voltage levels corresponding to an integral number of trailing locomotives;

means establishing electrical communication between lead and trailing units for propagating said generated voltages;

means contained in each locomotive, responding to said voltage levels, and transmitting said voltage diminished by at least one level;

means actuated by said responding means for selectively varying the power levels in predetermined trailing units, from one said level to another;

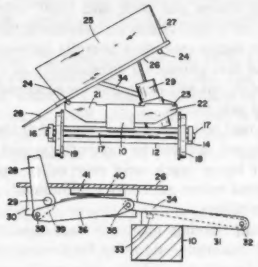
whereby the total consist power controlled from the lead unit, comprises a combination of pre-determined levels of trailing unit power, and the individual setting of the lead unit, providing efficient operating power levels for each locomotive.

4,266,486

RAIL CAR DOOR LINKAGE

Douglas A. Puariea, St. Paul, Minn., assignor to The Maxson Corporation, St. Paul, Minn.

Filed Aug. 30, 1979, Ser. No. 71,036
Int. Cl.³ B61D *9/00*
U.S. Cl. 105—276 **9 Claims**



1. A door linkage for a side dump railway car comprising in combination:

a main frame carried on wheeled trucks and having pivot support means on each side thereon;

a tilting bed resting on said pivot support means, said bed having a car body thereon and at least one side door pivoted at the side thereof;

a sliding means having first and second ends and adapted to bear against and slide along the underside of said tilting bed at a location on said tilting bed that moves upward during tilting of said tilting bed;

an extension portion on the bottom of said side door below the point at which the side door pivots on the tilting bed pivotally connected to said sliding means at the first end of said sliding means by a first pivotal connection;

a linkage arm having first and second ends;

linkage support means extending out from said main frame on the side of the car opposite from said side door, said linkage support means pivotally connected at its outboard end to the first end of said linkage arm by a second pivotal connection; and

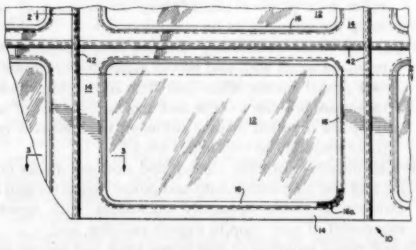
third pivotal connection means between the second end of said sliding means and the second end of said linkage arm.

4,266,487

RAILWAY PASSENGER CAR WINDOW FRAMING CONSTRUCTION

Walter J. Marulic, Gary, and Jack E. Gutrigde, Dyer, both of Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed Oct. 10, 1978, Ser. No. 949,822
Int. Cl.³ B61D *17/00, 25/00, 49/00*
U.S. Cl. 105—397 **16 Claims**



1. A railway passenger car with side wall construction comprising:

a wall structure with a window opening therein,
a resilient sealing strip member extending about the periphery of said window opening,
window means being positionable within and removably connected with said sealing strip member,
detachable clamp locking means for maintaining locking and alignment of said window means with said sealing strip member and interconnected with said resilient strip member, and
a window frame member defining the window and being removably attached to said wall structure and said clamp locking means.

4,266,488

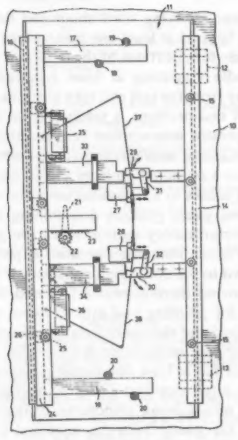
RELOCKING DEVICE FOR SAFES AND THE LIKE

Michael H. Markham, Rexdale, Canada, assignor to Chubb Industries Ltd., Brampton, Canada

Continuation-in-part of Ser. No. 974,354, Dec. 29, 1978, abandoned. This application Mar. 26, 1980, Ser. No. 134,055

Int. Cl.³ E05G *1/04*

U.S. Cl. 109—59 R **10 Claims**



1. In a safe or like security closure:
an elongated bolt mounted for reciprocation in a direction transverse to its length between a forward locking position and a rearward unlocking position,
bolt-operating means therefor,
locking means operable to lock the bolt in its forward position, and
relocking means for said bolt, the relocking means comprising:
a bolt-engaging member mounted on said closure rearwardly of the bolt, the member being pivotally connected to the closure by at least one unidirectional hinge for unidirectional pivotal movement from a first position in which it is disengaged from the bolt to a second position in which it is engageable with the bolt to prevent retraction of the bolt to the rearward unlocking position, said unidirectional hinge including means permitting pivotal movement of the bolt-engaging member in one direction only,
means biassing the bolt-engaging member towards said second position,
a control element connected to the bolt-engaging member, said control element normally being held in retaining condition for retaining the bolt-engaging member against said biassing means in said first position, and
means responsive to forcible attack on the closure for releasing the bolt-engaging member.

4,266,489

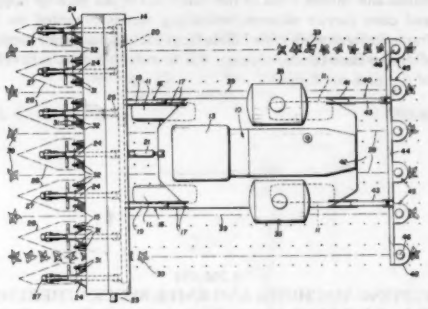
DOUBLE CROP PLANTER, SPRAYER AND TOPPER

Emmett W. Parramore, Rte. 1, Coolidge, Ga. 31738

Filed Jan. 29, 1980, Ser. No. 116,493

Int. Cl.³ A01C *19/00, 5/08*

U.S. Cl. 111—1 **13 Claims**



1. A planting machine comprising a high ground clearance vehicle, power implement hitches on the forward and rear ends of such vehicle, a planter apparatus carried by the power implement hitch at the forward end of the vehicle, said planter apparatus comprising plural side-by-side planter assemblies, pivoted support arms independently suspending the planter assemblies from the forward power hitch, a seed box common to the planter assemblies on the forward power hitch, and gage wheels on the lower ends of said support arms, standing row crop topper units carried by said rear power hitch in laterally spaced relationship, and a row crop sprayer means on said vehicle including a spray boom common to the planter assemblies and plural depending spray nozzles rearwardly of the planter assemblies at an elevation thereabove and well forwardly of the topper units.

4,266,490

SUGAR CANE PLANTER

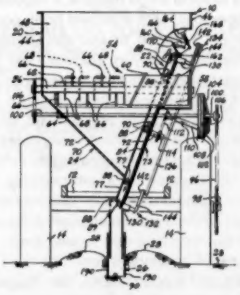
Rolf Haines, Bundaberg, and Robert M. Reid, North Bundaberg, both of Australia, assignors to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

Filed Jun. 1, 1976, Ser. No. 691,653

Claims priority, application United Kingdom, Jun. 12, 1975, 25290/75

Int. Cl.³ A01C *7/20*

U.S. Cl. 111—3 **4 Claims**



1. A sugar cane billet planter including a frame, a pick-up hopper mounted on the frame, a support plate rotatably journaled on the frame with a portion of one face of the support plate forming at least part of one wall of the pick-up hopper, cane carrier elements pivotally attached to said one face of the

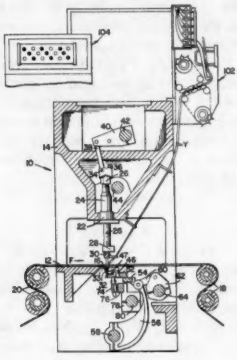
support plate, a control member rotatably journaled on the frame adjacent to the support plate, a control link connected to each cane carrier element and to the control member to control the position of the cane carrier element, drive means to rotate the support plate and thereby move each cane carrier element through the pick-up hopper where each carrier engages cane billets and carries some of the billets out of the pick-up hopper and cane carrier element unloading means mounted on the frame for removing cane billets from each cane carrier element after the cane carrier element has transported cane billets out of the pick-up hopper.

4,266,491

TUFTING MACHINES AND KNIFE BLOCKS THEREFOR

Richard J. Prichard, Hixson, Tenn., assignor to Spencer Wright Industries, Inc., Chattanooga, Tenn.

Filed Feb. 15, 1980, Ser. No. 121,805
Int. Cl.³ D05C *15/00*
U.S. Cl. 112—79 R **4 Claims**



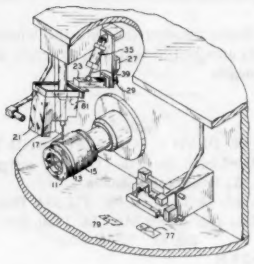
1. In a tufting machine having a frame including a laterally extending bed and a head positioned above the bed, a first needle reciprocable into cooperation with a first hook positioned in the bed to form loops thereon, a second needle reciprocable into cooperation with a second hook positioned in the bed spaced laterally adjacent to and elevationally above the first hook to form loops of yarn thereon, and an oscillatory knife block for carrying a first knife adapted to cooperatively engage said first hook to sever loops thereon and a second knife adapted to cooperatively engage said second hook to sever loops thereon, said knife block comprising an elongated body member having a pair if longitudinally extending spaced flanges connected together by a substantially centrally disposed web, a first channel defined on one side of said web for receiving said first knife, a second channel defined on the other side of said web for receiving said second knife, said channels being laterally spaced an amount less than the lateral spacing between said first and second hooks, the flanges on said one side of said web being stepped elevationally relatively to the flanges on the other side of said web by a distance substantially equal to the elevational spacing between said first and second hooks, and means for securing said knives in said channels with substantially equal lengths of said knives extending therefrom in a direction toward said hooks.

4,266,492

LACING MACHINE NEEDLE GUARD

Edward F. Bienz, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Feb. 28, 1979, Ser. No. 16,090
Int. Cl.³ D05B *83/00*
U.S. Cl. 112—121.2 **5 Claims**



1. An apparatus for tying cord about end turn portions of coils projecting beyond at least one side surface of a magnetic core carrying side turn portions of the coils and having at least one lacing needle executing at least reciprocatory motion toward and away from the coil end turn portions for tying cord about those coil end portions, a safety device for selectively discouraging operator intervention between the coil end turn portions and the lacing needle comprising: a sleeve-like guard movable between a retracted position and an operational position obstructing access to a region between the needle and the end turn portions; guard position determining means for hindering needle reciprocatory motion when the guard is determined to be in other than the operational position; an arm pivotally attached to the cord tying apparatus with said sleeve-like guard supported thereon near a free end thereof; power actuable means for pivoting said arm to move said guard between the retracted and the operational positions; and an operator actuable variable speed control means for controlling at least the speed of the at least one lacing needle reciprocatory motion between a full stop and a normal operating speed, the power actuable means being responsive to the speed control means to pivot the guard from the retracted position to the operational position when the speed control means is moved from a full stop position and to pivot the guard from the operational position to the retracted position when the speed control means is moved to the full stop position.

4,266,493

ELECTRONIC PATTERN STITCHING SEWING MACHINE

Susumu Hanyu, and Yoshinobu Tonomura, both of Hachioji, Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Jul. 6, 1979, Ser. No. 55,307
Claims priority, application Japan, Jul. 7, 1978, 53-81997
Int. Cl.³ D05B *3/02*
U.S. Cl. 112—158 E **4 Claims**

1. A sewing machine memorizing by manipulation of pattern selecting switches a number of patterns including different patterns to be stitched in series, comprising means for producing directing signals to stitch the selected number of patterns in series; means for detecting the directing signals; means for identifying, in response to the directing signals, the last needle position coordinate of a precedingly stitched pattern and the initial needle position coordinate of the following pattern to be stitched; means for designating one of a plurality of previously memorized patterns to interconnect the precedingly stitched pattern and the following pattern in dependence upon the last and the initial needle position coordinates, respectively, of said

precedingly stitched pattern and said following pattern; and means for interposing the designated interconnecting pattern between the precedingly stitched pattern and the following pattern.

L M R
(A)
LR
(B)
1 Pattern selection
2 Functional selection
3 Comparison between the last stitch coordinate of first pattern and the initial stitch coordinate of the following pattern
4 Identical
5 Sequential outputs of first pattern and the following pattern
6 Selection of interconnecting pattern
7 The last stitch coordinate and the initial stitch coordinate are replaced into the predetermined formula and calculated by accumulator
8 Sequential outputs of first pattern interconnecting pattern and the following pattern

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4,266,494

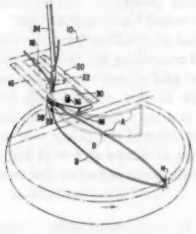
ANTI-HALOING THROAT PLATE

Stanley J. Ketterer, Jamesburg, N.J., assignor to The Singer Company, Stamford, Conn.

Continuation-in-part of Ser. No. 849,826, Nov. 9, 1977, abandoned. This application Sep. 11, 1978, Ser. No. 940,935

Int. Cl.³ D05B *57/08, 73/12*

U.S. Cl. 112—184 **3 Claims**



1. In a sewing machine having a reciprocatory thread carrying needle and a loop taker located in the bed of said sewing machine for grapsing and expanding a loop of thread forming a work limb and a take-up limb as said needle penetrates the material being sewn, an anti-haloing device comprising a throat plate having an aperture formed therein through which said needle traverses, means on said throat plate for separating and for positively restraining said work limb from said take-up limb of a loop of thread comprising a block having a thread slot formed therein and affixed to the underside of said throat plate in close proximity of said needle aperture and in such a position that when said loop taker grasps and expands a loop of thread the work limb thereof will pass into said slot, said slot having substantially parallel walls spaced apart only slightly greater than the maximum diameter of thread which may be accommodated by said thread carrying needle so as to frictionally retain said work limb of thread therein.

4,266,495

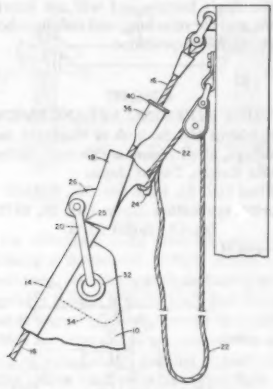
APPARATUS FOR SUPPORTING A SAIL

Ralph S. Hood, 2543 Lucille Dr., Fort Lauderdale, Fla. 33905

Filed Sep. 13, 1979, Ser. No. 75,511

Int. Cl.³ B63H *9/04*

U.S. Cl. 114—106 **8 Claims**



1. Apparatus for supporting and furling a fore-and-aft sail comprising; a mast:

a vertically slidable and rotatable sail furling member supported at least in part by said mast;

means for slidably connecting the luff of said sail to said rotatable sail furling member;

means for supporting the weight of said sail on said rotatable sail furling member mounted for longitudinal sliding motion thereon,

means for latching said slidable weight supporting means to the top of said rotatable sail furling member, and

means responsive to substantially vertical upward sliding motion of said rotatable sail furling member for unlatching said slidable weight supporting means member from the top of said rotatable member.

4,266,496

STABILIZER MEANS FOR A SURFACE VESSEL

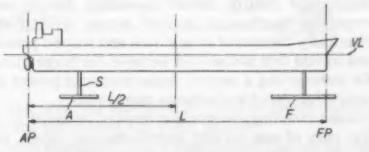
Ove Carlsen, Stabekk, Norway, assignor to A/S Blehr & Tenvig, Oslo, Norway

Continuation of Ser. No. 877,643, Feb. 14, 1978, abandoned. This application Feb. 15, 1980, Ser. No. 121,958

Claims priority, application Norway, Feb. 23, 1977, 770610; Nov. 1, 1977, 773739

Int. Cl.³ B63B *39/06*

U.S. Cl. 114—126 **9 Claims**



1. A self-propelled surface ship adapted for work in off-

shore locations, and having two perpendiculars, one fore and one aft; the perpendiculars being separated by a distance L, and having a midpoint therebetween; the ship also having stabilizing apparatus comprising:

(a) a forward stabilizer body having a horizontal surface area in the range of from 13% to 20% of the ship's waterplane area, with its center of gravity located forward of the midpoint a distance of at least 0.22 L when in an operative position;

(b) an aft stabilizer body having a horizontal surface area of from 7% to 15% of the ship's waterplane area, with its center of gravity located aft of the midpoint a distance of at least 0.14 L when in an operative position; and

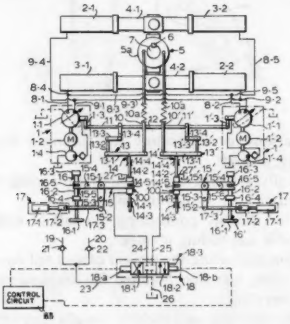
(c) means for raising and retracting said stabilizer bodies to respective transport positions so that they lie snugly against the ship's bottom and will not interfere with its movement, and for returning said stabilizer bodies to their respective operative positions.

4,266,497

MARINE STEERING ARRANGEMENT

Kashiku Toda; Moriji Honda, both of Nagasaki, and Haruhiko Mishina, Isahaya, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 12, 1978, Ser. No. 950,621
Claims priority, application Japan, Oct. 29, 1977, 52/129858
Int. Cl.³ B63H *25/00*
U.S. Cl. 114—144 R **4 Claims**



1. A marine steering construction comprising:

two parallel interconnection means operatively connected to a hydraulic steering machine, one of said parallel interconnection means being a spare interconnection means, and said two parallel interconnection means including respective first and second variable discharge pump units for being operatively connected to the hydraulic steering machine for actuating the hydraulic steering machine;

first and second power units operatively connected respectively to said first and second variable discharge pump units for causing said first and second variable discharge pump units to operate, said two parallel interconnection means including control force transmission systems and said control force transmission systems respectively connected to said first and second variable discharge pump units;

said control force transmission systems having respective mechanical control means connected thereto and said respective mechanical control means respectively mechanically connected to said first and second power units and to said first and second variable discharge pump units for transmitting a control force from said power units to respective variable discharge pump units;

hydraulic coupling/decoupling devices included in respective ones of said parallel interconnection means, said hydraulic coupling/decoupling devices located for connecting a respective mechanical control means to a respective control force transmission system, said hydraulic coupling/decoupling devices being operative for switching said control force transmission systems from a first state wherein said control force can be transmitted from said power units and control means to said variable discharge pump units for actuating said pump units, to a second state wherein said control force cannot be transmitted;

mechanical feedback means connected between said parallel interconnection means and to the hydraulic steering machine for transmitting a feedback from the steering machine which corresponds to an amount of steering done, to respective ones of said first and second variable discharge pump units and first and second power units; and

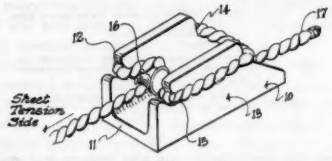
a rod connecting said parallel interconnection means to each other for relating and synchronizing the operation of said control means, said rod having absorbing means disposed therein for absorbing excessive forces generated as a result of defective operating conditions.

4,266,498

ROPE SECURING DEVICE

James R. Clark, 36 Elsmere Blvd., Wilmington, Del. 19805

Filed Jun. 9, 1978, Ser. No. 914,239
Int. Cl.³ B63B *21/04*
U.S. Cl. 114—218 **1 Claim**



1. A rope securing device comprising:

(a) a flat support (or base),

(b) two parallel substantially upright side members extending from said support;

(i) the two ends of each side member at one end of the support being substantially identically inclined with respect to the support in a direction gradually toward the other end of the support with the degree of inclination changing to provide a convex appearance of the ends,

(ii) the other two ends of each side member each having a substantially identical wedge-shaped cavity (recess) inclined toward said support; and

(c) a support bar protruding from the inside wall of one side member and extending toward the inside wall of the other side member, said support bar constructed and arranged to guide a rope looped around said bar and wherein the support bar is a lug extending from the inside wall of one side member toward the other side member, the sides of said lug being concave and said lug extending not over one half the distance between the two side members.

4,266,499

OFFSHORE COLUMN WITH MOORING HAWSER SYSTEM

William A. Tam, Greenville, Pa., assignor to Chicago Bridge & Iron Company, Plainfield, Ill.

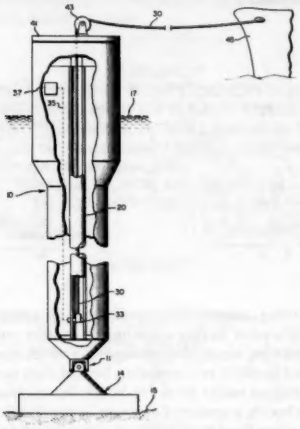
Filed Aug. 27, 1979, Ser. No. 70,095
Int. Cl.³ B63B *21/00*
U.S. Cl. 114—230 **8 Claims**

1. In an apparatus for mooring a vessel offshore comprising an elongated buoyant column and means for pivotally connecting the lower end of the column to a base anchored to a sea floor, the improvement comprising:

a hawser-receiving tube in the column;

a hawser guide means located in the column top portion;

a hawser having a first end located down in the tube and extending upwardly in the tube through the hawser guide means and terminating outwardly from the column in a second end to be connected to a vessel; and



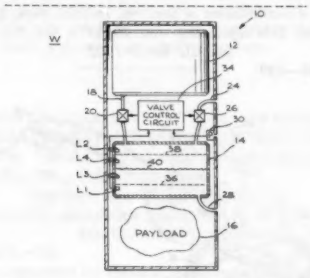
a remotely operable connector at the first end of the hawser for releasably but stationarily securing the hawser end to the tube so that traction applied by a vessel moored on the hawser second end is fully resisted.

4,266,500

HOVER CONTROL SYSTEM FOR A SUBMERSIBLE BUOY

Joseph A. Jurca, Tarzana, Calif., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Sep. 24, 1979, Ser. No. 78,256
Int. Cl.³ B63G *8/22*
U.S. Cl. 114—333 **9 Claims**



4. A buoyancy control system for a buoy to be submersed in a surrounding liquid comprising:

a first chamber for containing a pressurized fluid;

a second chamber having an opening formed in its bottom to permit liquid to flow between said second chamber and said surrounding liquid;

controllable interconnection means for interconnecting said first chamber and said second chamber;

controllable pressure relief means for opening an upper portion of said second chamber to said surrounding liquid; and

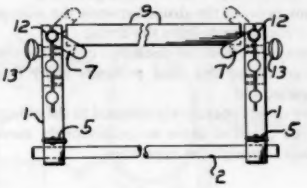
depth adjustment means responsive to liquid pressure external to said buoy and to liquid levels within said second chamber for controlling said interconnection means and said pressure relief means.

4,266,501

CAKE TRIMMING AND ICING LEVELLING AND SMOOTHING MEANS

Mary R. Knupp, 6100 Laurent 616-B, Parma, Ohio 44129, and John Tymkewicz, Cleveland, Ohio, assignors to Mary R. Knupp, Parma, Ohio

Filed Dec. 11, 1979, Ser. No. 102,856
Int. Cl.³ B05C *17/00*
U.S. Cl. 118—15 **6 Claims**



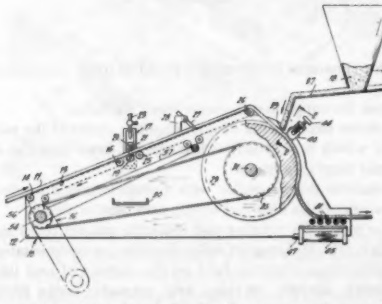
1. Means for trimming, icing levelling, and smoothing of cakes, comprising a framework within which a cake to be treated is positioned, said framework including upright corner posts rectangularly spaced in pairs, each pair being connected to a frame rod at spaced intervals thereon to constitute a frame end, which ends are arranged in spaced relation and generally parallel, a pair of substantially parallel support instrumentalities connecting the corner posts at about right angles with respect to the frame rods aforesaid, said support instrumentalities including means for adjusting the same vertically, said instrumentalities being arranged to support a screed-like member thereon for movement along the support instrumentalities for trimming, icing levelling and smoothing a cake positioned as stated.

4,266,502

SEED APPLYING APPARATUS FOR FOOD PRODUCTS

George Monaco, Little Neck, N.Y., assignor to Stella D'oro Biscuit Co. Inc., Bronx, N.Y.

Filed Nov. 1, 1979, Ser. No. 90,290
Int. Cl.³ B05C *1/08, 5/02, 19/00*
U.S. Cl. 118—16 **16 Claims**



1. A seed applying apparatus for food products comprising:

a. Spaced upstanding rigid side plates;

b. Spaced elongated rollers transversely carried by the side plates and journaled therein;

c. At least one conveyor belt carried by the spaced rollers in

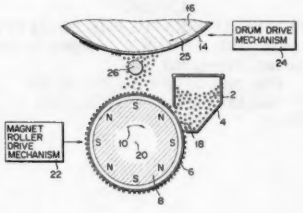
driven engagement therewith to receive the food products to be seeded;
d. A loading end and a discharge end on said conveyor belt;
e. Wetting means disposed in the path of the food products to apply a liquid to the said food products;
f. An annularly grooved drum carried by the side plates to receive the wetted food products;
g. A source of seeds disposed above the surface of the drum;
h. A seed dispensing chute on the seed source;
i. A dispensing end on the said chute positioned adjacent the drum in the area where the food products first contact the grooved surface of the drum;
j. Roller means adjacent the dispensing end to urge the seeds into firm contact with the food products;
k. Means beneath the drum between the side plates to re-cover excess seeds from the drum;
l. Means spaced from the discharge end of the conveyor belt to urge the seeded food products away from the said apparatus, and
m. Drive means operatively coupled to the elongated rollers and the grooved drum to continuously move the food products through the apparatus.

4,266,503

APPARATUS FOR FORMING A CLOUD OF TONER PARTICLES

Tsutomu Uehara, Yokosuka; Toshihiko Oguchi, Kawasaki; Tsutomu Kubo, Yokohama; Yukio Suzuki, Ayase; Toshiharu Nakagawa, Yokohama, and Ichiyoshi Saito, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 18, 1979, Ser. No. 40,141
Claims priority, application Japan, May 25, 1978, 53/62513
Int. Cl.[3] G03G *13/09, 15/09*
U.S. Cl. 118—657 **14 Claims**



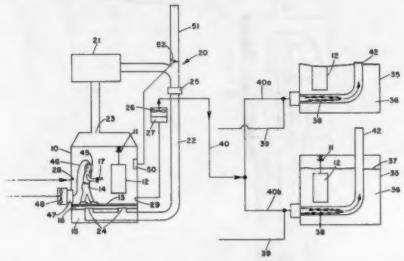
1. An apparatus for forming a cloud of toner particles comprising:
means for supplying magnetic toner particles;
a tubular sleeve made of non-magnetic material the surface of which is supplied with magnetic toner particles from said supplying means;
a rotatable magnet roller with a predetermined number of magnet poles disposed within said tubular sleeve;
drive means for rotating said rotatable magnet roller in one direction, said magnet roller forming, on being rotated, an alternating magnetic field on the surface of said tubular sleeve, thereby carrying said magnetic toner particles around the surface of said tubular sleeve; and
a magnetic member located adjacent said rotatable magnet roller and being disposed in the alternating magnetic field to form a cloud of particles from said of the carried toner paticles.

4,266,504

PAINT SPRAYING ASSEMBLY

Keith G. Roesner, Kewanee, Ill., assignor to Deere & Company, Moline, Ill.

Filed Aug. 10, 1979, Ser. No. 65,446
Int. Cl.[3] B05C *15/00*
U.S. Cl. 118—663 **4 Claims**



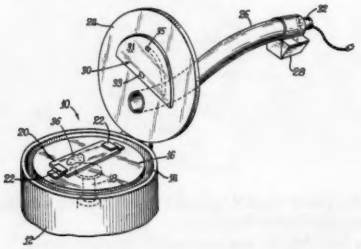
1. A painting assembly comprising: a spraying booth; a pre-spraying washer having a washing container with a washing liquid therein; means for conveying articles through said container and booth; a re-circulating fan and duct work having an inlet to and an outlet from the booth for re-circulating air through the booth; a source of clean air in communication with said booth; a gas fired burner associated with said washer for heating liquid in said container, said burner having a gas source and an outside exhaust; a blower having an inlet to said re-circulating air for drawing clean make-up air from said clean air source into said booth as partial replacement for the re-circulating air, said blower having a connection into the gas source for said burner whereby said burner will burn off the solvent contained in the air drawn from the re-circulating air by said blower prior to passage into the exhaust.

4,266,505

APPARATUS FOR THE PREPARATION OF BLOOD SAMPLES FOR AUTOMATED ANALYSIS

James W. Bacus, Hinsdale, Ill., assignor to Rush-Presbyterian-St. Luke Medical Center, Chicago, Ill.

Division of Ser. No. 862,735, Dec. 21, 1977, Pat. No. 4,209,548, which is a continuation of Ser. No. 737,532, Nov. 1, 1976, abandoned. This application Jun. 25, 1979, Ser. No. 51,896
Int. Cl.[3] B44D *1/02*
U.S. Cl. 118—699 **2 Claims**



1. In an apparatus for preparing a blood specimen in a monolayer of red blood cells on a slide suitable for automated analysis comprising housing means defining a spinning chamber, rotatable platen means disposed substantially horizontally within said chamber and adapted to receive slide means having deposited thereon a blood sample containing red blood cells, drive means adapted to rotate said platen means and to throw excess blood cells from said platen, means controlling the period of actuation of said drive means to dispose said red

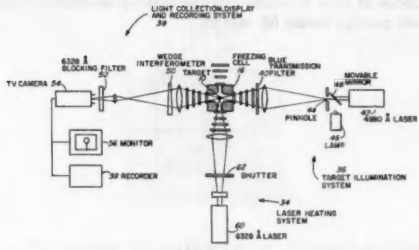
blood cells in substantially a monolayer on said slide and to stop rotation of said platen means after less than 2.5 seconds of rotation, means for generating a vaporous fixing agent at a location remote from said rotatable platen means, conduit means for introducing a vaporous fixing agent without wetting said cells to said red blood cells on said platen following their dispersal into substantially a monolayer on said slide to fix said cells in about fifteen minutes.

4,266,506

APPARATUS FOR PRODUCING CRYOGENIC INERTIALLY DRIVEN FUSION TARGETS

John R. Miller, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 25, 1978, Ser. No. 872,284
Int. Cl.³ B05D *7/00*; G21C *3/20*
U.S. Cl. 118—725 **10 Claims**



1. A device for forming a substantially uniform layer of a cryogenic material on the inner surface of a microballoon sphere comprising:

an isothermal freezing cell containing said microballoon;

cryogenic He contained within said isothermal freezing cell at approximately 4° K. at a pressure sufficient to rapidly freeze said cryogenic material in a uniform layer;

means for locally heating said microballoon sphere to vaporize said cryogenic material within said microballoon sphere;

means for rapidly eliminating said means for local heating to cause said cryogenic material to condense and freeze at a rate sufficient to form a substantially uniform layer on said inner surface of said microballoon sphere.

4,266,507

CAP-MOUNTING MECHANISM FOR APPARATUS FOR THERMAL TREATMENT OF SEMICONDUCTORS

Ryozo Satoh, Yamato, Japan, assignor to Tel-Thermco Engineering Co., Ltd., Yokohama, Japan

Filed Mar. 4, 1980, Ser. No. 127,009
Claims priority, application Japan, Mar. 8, 1979, 54-29726[U]
Int. Cl.³ C23C *13/08*
U.S. Cl. 118—733 **7 Claims**

1. In an apparatus for thermal treatment of semiconductors, of a type comprising

(a) a tube, which has a longitudinal axis, and which is formed with a sealing surface near an open end of the tube,

(b) a cap, which is formed with a sealing surface near an open end of the cap, and which fits onto the tube so as to effect a hermetic seal between the cap and the tube when the sealing surfaces are fitted to each other, and

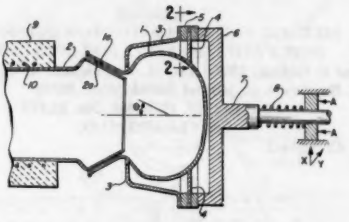
(c) a framework, which has a longitudinal axis, which carries the cap, which is movable along the longitudinal axis of the framework so as to carry the cap forwardly toward the tube, and which is movable in mutually perpendicular directions at right angles to the longitudinal axis of the framework,

an improvement wherein the cap has a substantially spherical portion and a flared portion, on which the sealing surface of the cap is formed, and wherein the apparatus comprises

(d) an annular retainer, which is integral to the framework,

(e) a plurality of elongated members, each of which has a proximal end attached to the annular retainer, each of which extends radially inwardly from the annular retainer, and each of which has a distal end,

(f) a plurality of leaf springs, each of which has proximal end attached to the annular retainer, each of which extends radially inwardly from the annular retainer, and each of which has a distal end, the distal ends of the leaf springs being separated longitudinally from and rearwardly of the distal ends of the elongated members and wherein the



substantially spherical portion of the cap is confined by the distal ends of the elongated members and by the distal ends of the leaf springs except for the flared portion, which extends forwardly, past the distal ends of the elongated members, and toward the tube, so as to permit limited inclination of the cap with respect to the longitudinal axis of the framework, whereby the leaf springs impart elastic forces effecting self-alignment of the cap and the tube when the cap is pressed onto the tube, despite angular deviation between the longitudinal axis of the tube and the longitudinal axis of the framework, and

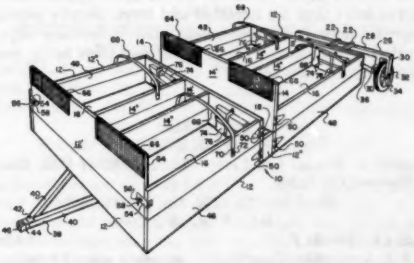
(g) means associated with said framework to hold said cap in sealed engagement with said tube.

4,266,508

APPARATUS FOR SIMULTANEOUSLY EXERCISING A PLURALITY OF HORSES

Robert A. McNulty, P.O. Box 87, Vernon, N.Y. 13476

Filed Nov. 13, 1979, Ser. No. 94,042
Int. Cl.³ A01K *15/02*
U.S. Cl. 119—29 **8 Claims**



1. An apparatus for simultaneously exercising a plurality of horses or like animals comprising a main frame including a plurality of upright side walls, and a plurality of upright partition walls, together defining a plurality of stalls for confining in each said stall a horse or like animal for exercising, said main frame and each said stall having a leading end and a trailing end, a plurality of gates formed in said side walls, at least one said gate being formed at each said stall to permit entery into and exit from each said stall of a horse or like animal, rein

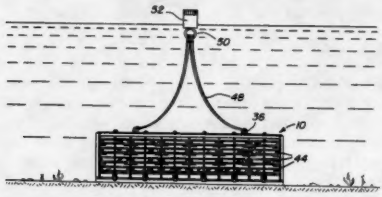
means associated with said leading end of each said stall and fastenable with the head of a horse or like animal for guiding the horse or like animal during exercise thereof, attachment means affixed to said leading end of said main frame for connection of said main frame with a self-powered vehicle, and a plurality of rotatable wheels affixed to the trailing end of said main frame, whereby a plurality of horses may be placed one in each said stall, fastened to the rein means thereof and simultaneously exercised by connecting said attachment means with a self-powered vehicle and operating said vehicle to pull said frame therebehind causing said horses to jog safely within their respective stalls in the direction of movement of said self-powered vehicle.

4,266,509

METHOD AND APPARATUS FOR OFFSHORE DEPURATING HABITAT FOR SHELLFISH

Edgar R. Gollott, 1308-½ Lee St., and Thomas A. Gollott, 1390 E. Bayview Ave., both of Biloxi, Miss. 39530

Filed Oct. 17, 1979, Ser. No. 85,473
Int. Cl.³ A01K *61/00*
U.S. Cl. 119—2 **6 Claims**



1. An enclosure for depurating shellfish and protecting the shellfish against natural predators as well as theft, said enclosure including an open framework defining a plurality of laterally spaced apart sets of vertically spaced elongated horizontal cavities open at one set of corresponding ends only, at least one open tray slidably removably received in each of said cavities through the open end thereof, the upper portions of corresponding adjacent cavities of adjacent sets of cavities being horizontally communicated, said trays including foraminated bottom, side and end walls, said enclosure defining means preventing movement of said trays between corresponding laterally spaced cavities, outwardly of the remote sides of the endmost cavities and means releasably locking said trays against endwise removal from the open ends of said cavities, said cavities being vertically spaced apart approximately 2 inches more than the depth of said trays, thereby providing approximately 2 inches vertical spacing between adjacent vertically spaced trays the depth of said trays being greater than said vertical spacing.

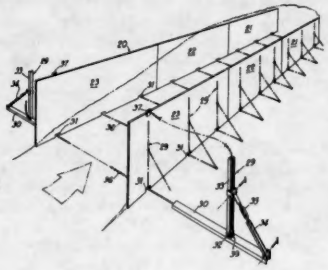
4,266,510

PORTABLE SILO

Robert A. Rowan, and Leroy Mathis, both of P.O. Box 68, Enigma, Ga. 31749

Filed Jan. 11, 1980, Ser. No. 111,360
Int. Cl.³ A01K *5/00*
U.S. Cl. 119—51 R **8 Claims**

4. In a portable silage bunker, at least a pair of bunker side wall sections adapted to contain silage between them when they are held in upright opposing relationship, and at least one pair of bracing assemblies for said side wall sections comprising a pair of base members in spaced end-to-end relationship with one base member engaging beneath one bunker side wall section transversely thereof, upright members rising from said base members between the ends thereof and engaging the outer faces of the bunker side wall sections to stabilize them, and a flexible tie interconnecting the bracing assemblies and having an adjustable connection with the top of each bunker side wall section, said tie extending transversely between said side wall



sections at their bottoms, and the bracing assemblies having guide passage means for said tie.

4,266,511

ORNAMENTAL AND PROTECTIVE COLLAR FOR AN ANIMAL COLLAR

Helen S. Muench, 130 Windsor Ave., Westmont, N.J. 08108

Filed Nov. 1, 1979, Ser. No. 90,337
Int. Cl.³ A01K *27/00*
U.S. Cl. 119—106 **5 Claims**

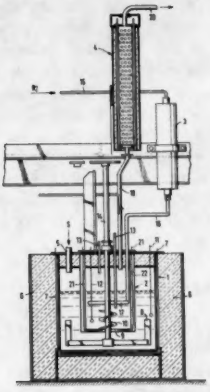
1. In combination, a dog collar comprising an elongate flexible collar element, and a buckle on one end of said collar element for adjustable connection to the other end of said collar element; and a protective and ornamental cover for said dog collar comprising an elongate strip of decorative flexible fabric for extension along the outer side of said collar element, said strip being wider than said collar element to obscure the latter and protect persons from excessive contact with said collar element, loops spaced along the inner side of said strip laterally medially thereof for slidably receiving spaced regions of said collar element, end ties extending from respective ends of said strip for retaining engagement with a said buckle, said ties being adapted for connection together and to said buckle for positively locating said strip in position relative to said collar element, and a lining tape secured along the inner side of and coextensive with said strip laterally medially thereof for wear resistant engagement with said collar element, said ties being defined by end extensions of said tape extending beyond opposite ends of said strip for extension through said buckle.

4,266,512

APPARATUS FOR THE VAPORIZATION OF ELEMENTAL SULFUR BY MEANS OF CARRIER GAS

Pekka T. Setala; Simo A. I. Makipirtti, both of Nakkila, and Heimo J. Heino, Pori, all of Finland, assignors to Outokumpu Oy, Helsinki, Finland

Continuation-in-part of Ser. No. 973,433, Dec. 26, 1978. This application Jun. 26, 1979, Ser. No. 52,188
Int. Cl.[3] F22B *37/00*
U.S. Cl. 122—5.5 R 5 Claims



1. An apparatus for the vaporization of elemental sulfur by means of a carrier gas, comprising: a thermally insulated first vessel for the melting of elemental sulfur, provided with heating means, a stirrer and an inlet pipe for elemental sulfur; and at least one second vessel inside the first vessel and communicating with said first vessel, said second vessel being provided with heating means, a stirrer, means for feeding carrier gas and an outlet pipe for sulfur vapors, for vaporizing the molten elemental sulfur flowing from the first vessel by means of carrier gas.

4,266,513

FLUE HEAT EXCHANGER

Orland O. Schaus, Agincourt, Canada, assignor to Canadian Gas Research Institute, Don Mills, Canada

Filed Aug. 20, 1979, Ser. No. 68,132
Claims priority, application Canada, Sep. 1, 1978, 310568
Int. Cl.[3] F22B *7/00*
U.S. Cl. 122—155 A 13 Claims

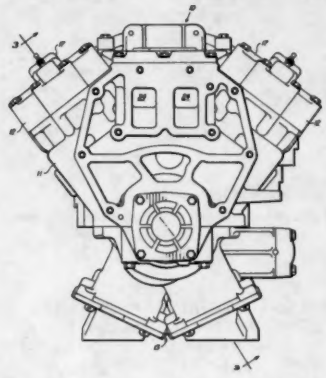
1. A heat exchanger for use in a flue comprising, in combination, a plurality of tubular metallic refractory sections having an average length to diameter ratio within the range of 0.5:1 to 2:1 randomly packed within said flue to fill at least a portion of said flue to form a gas-permeable packing whereby heating gases flowing through said flue are distributed evently across the flue diameter for the length of the flue packed with said sections.

4,266,514

INTAKE MANIFOLD SYSTEM FOR A TWO-CYCLE V-ENGINE

Alfred E. Tyner, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Aug. 6, 1979, Ser. No. 64,121
Int. Cl.[3] F02B *25/28*
U.S. Cl. 123—55 R 10 Claims



1. A multiple cylinder two-cycle outboard motor engine comprising:

(A) a cylinder block having a plurality of cylinders arranged in two banks forming a V;

(B) a plurality of pistons, one mounted in each of said cylinders;

(C) a crankcase member defining, with said cylinder block, a crankcase;

(D) a crankshaft means supported in said crankcase by said cylinder block and said crankcase member for rotation about a vertical axis, said crankshaft means connecting said pistons for reciprocation in said cylinders and dividing said crankcase into crank chambers, one for each of said cylinders, subject to compression and expansion with the reciprocation of said pistons; and

(E) a plurality of inlet passages, one for each of said crank chambers, for admitting an air-fuel mixture to said crank chambers, said inlet passages being arranged in two vertical banks forming a V.

4,266,515

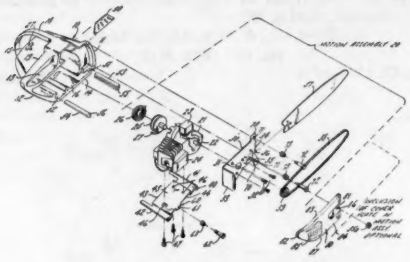
ENGINE POWER PACK ASSEMBLY HAVING ANTI-VIBRATION FEATURES

Kenneth L. Bross, Bourbonnais, Ill., assignor to Roper Corporation, Kankakee, Ill.

Division of Ser. No. 946,070, Sep. 27, 1978. This application Nov. 1, 1979, Ser. No. 90,288
Int. Cl.[3] F02B *71/00*; F02P *3/00*; B60K *5/10*
U.S. Cl. 123—198 E 1 Claim

1. An engine power pack assembly comprising, in combination, a housing in the form of a shell fully open one of its lateral sides and having integral front, back, top, bottom and side walls forming the other sides to define a central chamber; a motion assembly including a small single cylinder gasoline engine and an implement; a mounting plate secured to the engine, said mounting plate having substantially parallel front and rear edges; the shell having edge receiving means adjacent the front and back walls of the shell spaced for matingly receiving the front and rear edges of the plate, the edge receiving means being in the form of interposed inserts of soft resilient material formed to hold the mounting plate resiliently captive in a direction at right angles thereto as well as in the forward and back direction, the central chamber being conformingly sized to receive the engine so that the engine and its mounting

plate may be slid into seated position in the chamber in the manner of a drawer for floating support above the bottom wall of the shell; means for securing the implement to the engine for



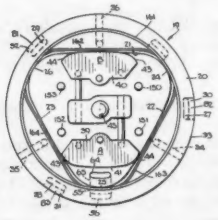
support thereon and for transmitting power from the engine to the implement to complete the motion assembly; and means for holding the assembly in its seated position.

4,266,516

INTERNAL COMBUSTION ROTARY ENGINE

Robert Hakner, 2050 21st Dr., Brooklyn, N.Y. 11214

Filed Mar. 19, 1979, Ser. No. 21,832
Int. Cl.[3] **F02B** *53/00*
U.S. Cl. 123—241 **19 Claims**



1. In a rotary internal combustion engine having:

an annular housing with oppositely disposed end surfaces and at least two inner walls forming a housing cavity within the housing, the inner walls being equiangularly disposed about the longitudinal axis of the annular housing with the inner walls adjacent one another intersecting in rounded corner portions;

a drive shaft disposed within the housing cavity with the axis of the shaft extending along the longitudinal axis of the annular housing;

at least one rotary sliding piston disposed within the housing cavity and having a face portion adjacent an inner wall of the housing, the face portion having a leading edge and a trailing edge and having two oppositely disposed side portions extending from the face portion, the face portion being of a predetermined length in relation to the inner walls of the annular housing to enable the leading edge and the trailing edge of the piston to maintain sliding contact with adjacent inner walls, the piston having a width substantially the same as the width of the annular housing in the direction of the longitudinal axis thereof,

means disposed at each of the opposite ends of the housing adjacent the end surface thereof and extending across the housing cavity adjacent each side portion of a piston for closing the housing cavity between the face portion of the piston and the inner walls of the annular housing, the piston being adapted to be driven with a rotary and sliding motion with respect to the inner walls of the housing by the expansion of pressured products of combustion between the face portion of the piston and an inner wall of the housing;

means disposed within the annular housing for connecting the piston to the drive shaft;

means disposed within the annular housing for guiding each piston in the rotary and sliding motion thereof to rotate with respect to the central axis of the housing and to slide with respect to the inner walls of the housing, the guiding means positioning the end portions of the face portion of the piston adjacent intersecting inner walls of the housing when the face portion of the piston is adjacent the corner therebetween to form alternately an intake chamber and an expansion chamber, the guiding means positioning the face portion of the piston to be substantially contiguous with an inner wall of the housing and the end portions of the face portion to be adjacent the corner portions of the inner wall to which the face portion is contiguous to compress alternately a charge between the face portion of the piston and the inner wall and to discharge alternately exhaust products from between the face portion and the inner wall;

the improvement comprising:

at least one of the means disposed adjacent an end surface of the housing for closing the housing cavity between the face portion of a piston and the inner walls of the annular housing including:

(a) a valving assembly having at least one rotatable inner valving ring adapted to rotate about the longitudinal axis of the annular housing, the inner valving ring having

(i) a surface portion exposed to the housing cavity adjacent a side portion of a piston and the inner wall of the housing,

(ii) at least one intake-exhaust duct for one of the pistons disposed in the inner valving ring and having a housing cavity orifice on the surface portion and an intake-exhaust orifice at the end of the intake-exhaust orifice, the number of intake-exhaust ducts in all inner valving rings corresponding to the number of pistons or a multiple thereof, the housing cavity orifice being disposed at a predetermined radius with respect to the center of the inner valving ring to enable the housing cavity orifice to be in communication with the housing cavity when the housing cavity orifice is rotated to adjacent a rounded corner of the annular housing and to enable the housing cavity orifice to be covered by the side portion of a piston when the housing cavity orifice is rotated to between rounded corners of the annular housing,

the intake-exhaust orifice being rotated to one location when the housing cavity orifice is in communication with an intake chamber formed in the housing cavity for delivery of an intake charge thereto and being rotated to another location when the housing cavity orifice is in communication with an expansion chamber formed in the housing cavity for delivery of an exhaust charge therefrom, and

(iii) means disposed adjacent the rotary path of travel of the intake-exhaust orifice for closing the intake-exhaust orifice through a portion of the rotary path of travel thereof and for opening the intake-exhaust orifice when rotated to the one and another locations thereof; and

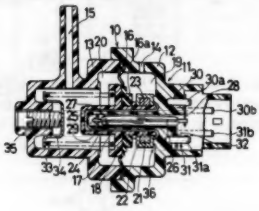
(b) means coupled to the drive shaft for rotating the inner valving ring in synchronism with the rotation of the piston.

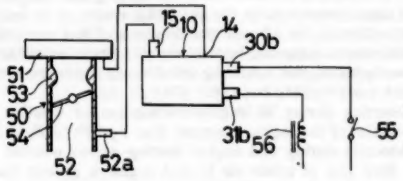
4,266,517

DIFFERENTIAL PRESSURE SWITCH DEVICE RESPONSIVE TO DIFFERENTIAL PRESSURE AND TEMPERATURE CHANGE

Naoji Sakakibara, 21, Shiokaki, Takara-Machi Chiryu city, Aichi pref., and Nobuyuki Hashimoto, 30-18, Kamisaka, Nakata-cho, Toyota-city, Aichi Pref., both of Japan

Continuation of Ser. No. 854,381, Nov. 23, 1977, abandoned.
This application Jun. 21, 1979, Ser. No. 50,865
Claims priority, application Japan, Nov. 24, 1976, 51-141609
Int. Cl.[3] H01H 35/34
U.S. Cl. 123—333 8 Claims





1. A differential pressure switch device operable in response to both differential pressure and changes in temperature of an internal combustion engine to control exhaust emissions therefrom which comprises, in combination:

a single housing;

an annular flexible diaphragm rigidly secured about its periphery in said housing to divide said housing into a first chamber and a second chamber;

means for admitting fluid pressures into said chambers for moving said diaphragm in response to differential pressure between said chambers;

a movable cylindrical member secured axially in the center of said diaphragm for movement therewith;

a permanent annular magnet mounted on the outer wall of said cylindrical member for movement therewith;

a thermo ferrite connected with said magnet for operative cooperation therewith in response to said temperature changes of said engine, said thermo ferrite being positioned adjacent said magnet;

biasing means engaging said cylindrical member for biasing said cylindrical member, said magnet, and said thermo ferrite into a rest position when the differential pressure between said first and second chambers is below a predetermined value;

a reed switch assembly disposed within said cylindrical member, said reed switch being actuated upon movement of said magnet in a predetermined position as well as being actuated by said thermo ferrite when surrounding temperature reaches a predetermined degree; and

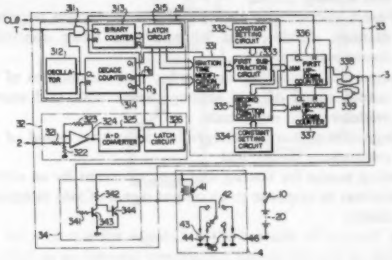
means connected to said housing for controlling flow of fuel to said engine in response to actuation of said reed switch assembly.

4,266,518

METHOD OF CONTROLLING IGNITION TIMING FOR INTERNAL COMBUSTION ENGINES AND APPARATUS FOR CARRYING OUT THE SAME

Minoru Nishida; Tadashi Hattori, both of Okazaki, and Hiroaki Yamaguchi, Anjo, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Oct. 6, 1978, Ser. No. 949,255
Claims priority, application Japan, Nov. 18, 1977, 52-139092; Feb. 1, 1978, 53-10197
Int. Cl.[3] F02P 5/04
U.S. Cl. 123—416 6 Claims



1. In a method for controlling the timing of the ignition spark in a combustion engine having a rotatable output shaft, said ignition spark timing being revised in each rotation cycle of said output shaft, the improvement comprising the steps of:

storing a first ignition spark timing actually supplied to said internal combustion engine in a preceding rotation cycle of said output shaft;

anticipating a second ignition spark timing in response to sensed operating conditions of said combustion engine in each current rotation cycle of said output shaft;

correcting said second ignition spark timing in accordance with said first ignition spark timing to provide a third ignition spark timing which is closer than said second timing to said first timing; and

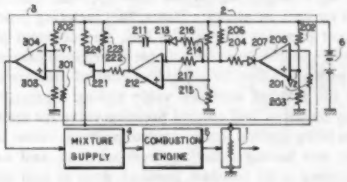
supplying said combustion engine with the ignition spark in the current rotation cycle of said output shaft when said output shaft rotates to a position corresponding to said third timing of ignition spark.

4,266,519

SYSTEM FOR CONTROLLING AN OXYGEN CONCENTRATION IN EXHAUST GASES

Hideaki Norimatsu, and Koichi Furuta, both of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 30, 1978, Ser. No. 964,962
Claims priority, application Japan, Feb. 17, 1978, 53/17771
Int. Cl.[3] F02D 35/00
U.S. Cl. 123—440 7 Claims



1. A system for controlling an oxygen concentration in exhaust gases emitted from a combustion engine comprising:

means for sensing a presence and absence of oxygen in exhaust gases emitted from a combustion engine to produce

an output signal having magnitudes respectively indicative of said presence and absence of oxygen;

means for comparing said magnitudes of said output signal of said sensing means with a predetermined magnitude indicative of a reference concentration between said presence and absence of oxygen;

means for controlling said oxygen concentration in said exhaust gases toward said reference concentration in response to an output signal of said comparing means; and

means for controlling either one of said magnitudes of said output signal of said sensing means toward another predetermined magnitude in response to said output signal of said sensing means;

wherein said sensing means includes an oxygen responsive titanium dioxide, and wherein said latter controlling means includes:

comparison means for comparing said magnitudes of said output signal of said sensing means with said another predetermined magnitude;

integration means for integrating an output signal of said comparison means; and

biasing means for biasing said sensing means by an electric current in response to an output signal of said integration means.

4,266,520

FUEL-AIR MIXTURE ARRANGEMENT WITH AN AIR-COMPRESSING SUPER-CHARGER FOR A COMBUSTION ENGINE

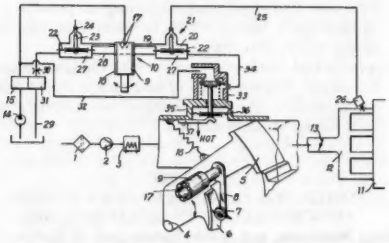
Hans-Jurgen Muller, Gelsenkirchen, Fed. Rep. of Germany, assignor to Pierburg GmbH & Co. Kg, Neuss, Fed. Rep. of Germany

Filed May 10, 1979, Ser. No. 37,700

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1978, 2830709

Int. Cl.³ F02D *3/02, 23/02*

U.S. Cl. 123—454 **2 Claims**



1. A fuel-air mixture arrangement for a combustion engine, comprising: an intake pipe with continuous injection; an air-compressing supercharger; an air quantity meter located in said intake pipe said air quantity meter comprising a ram flap, a throttle flap arranged behind said ram flap; a fuel metering unit actuated by said air quantity meter, fuel metering proceeding at constant pressure drop in the fuel, said constant pressure drop being variable depending on predetermined parameters; a control pressure valve for providing control-pressure circulation for the fuel; an auxiliary valve having a pressure drop varied by means of said control pressure valve for controlling variables being applied to said control pressure valve; said fuel metering unit having metering cross sections, said auxiliary valve keeping a set constant pressure drop at said metering cross sections constant, said air quantity meter being located downstream of said air-compressing supercharger; a diaphragm unit; said control pressure valve being fed supercharger air pressure prevailing upstream of said throttle flap by said diaphragm unit.

4,266,521

METHOD OF FUEL INJECTION CONTROL DURING STARTING

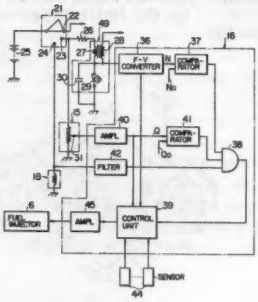
Jiro Nakano, and Hideo Miyagi, both of Okazaki, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Apr. 19, 1979, Ser. No. 31,478

Claims priority, application Japan, Oct. 6, 1978, 53-122513

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—491 **5 Claims**



1. In a method for controlling the opening and closing of a fuel injector mounted in the air intake system of an internal combustion engine wherein the flow rate of fuel supplied by the injector is controlled by an electronic control unit in accordance with engine operating conditions, the improvement which comprises the steps of:

detecting during an engine starting period whether the r.p.m. of the engine is greater than a preset level,

detecting during said engine starting period whether the flow rate of intake air to said engine is greater than a preset level,

operating said control unit such that it fixes the flow rate of fuel supplied by said injector at a predetermined level during said starting period when both the detected engine r.p.m. and flow rate of intake air are below their respective preset levels, and

operating said control unit such that it varies the flow rate of fuel supplied by said injector in accordance with engine operating conditions during said starting period when at least one of said detected engine r.p.m. and flow rate of intake air is greater than a respective preset level.

4,266,522

FUEL INJECTION SYSTEMS

Malcolm Williams, Solihull; Albert R. Tingey, Whitacre Heath; John P. Southgate, Braunton Nr. Barnstable, and Steven J. Russell, Coventry, all of England, assignors to Lucas Industries Limited, Birmingham, England

Continuation of Ser. No. 847,625, Nov. 1, 1977, abandoned. This application Apr. 16, 1979, Ser. No. 30,683

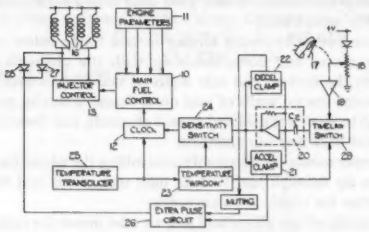
Claims priority, application United Kingdom, Nov. 4, 1976, 45860/76

Int. Cl.³ F02D *5/02*

U.S. Cl. 123—492 **6 Claims**

1. An electronic fuel injection control for an internal combustion engine having an engine throttle, the control comprising a main fuel control circuit for applying to at least one fuel injection valve pulses of duration determined by at least one engine operating parameter controlling said main fuel control circuit, an auxiliary pulse source sensitive to opening movement of the engine throttle for applying at least one additional pulse to said fuel injection valve when the throttle is opening, and muting means sensitive to closing movement of the throttle and arranged to prevent the auxiliary pulse source from producing a pulse for a predetermined time following closing

movement of the throttle, said auxiliary pulse source comprising means sensitive to the rate of change of the position of the throttle so as to produce a pulse whenever the rate of change



exceeds a predetermined positive value, said muting means being connected to said rate of change sensitive means so as to be brought into operation when the rate of change is less than a predetermined negative value.

4,266,523

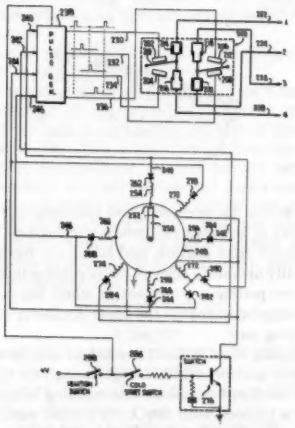
ELECTROMAGNETICALLY ACTUATED PUMPS

Willem Brinkman, Velp, Netherlands, assignor to Holec N.V., Hengelo, Netherlands

Division of Ser. No. 560,771, Mar. 21, 1975, Pat. No. 4,022,174, which is a continuation-in-part of Ser. No. 452,549, Mar. 19, 1974, Pat. No. 3,994,272, which is a continuation-in-part of Ser. No. 452,619, Mar. 19, 1974, Pat. No. 3,943,892. This application Oct. 22, 1979, Ser. No. 87,147

Int. Cl.³ F02M *69/02*

U.S. Cl. 123—499 **5 Claims**



1. In an injection system for an internal combustion engine having a plurality of cylinders, a plurality of electromagnetically activated injector pumps each cylinder being supplied by one of said pumps, pulse generator means having a plurality of output conductors each pump being associated with one of said output conductors and said pulse generating means having an equal plurality of input conductors, energizing means connected to said input conductors for activating said pumps through said output conductors in a predetermined sequence and at a frequency related to the rotational speed of said engine; and supplemental means activating said pumps through said output conductors for selectively reordering said sequence and doubling said frequency.

4,266,524

DEVICE FOR REGULATING THE AMOUNT OF EXHAUST GASES RECYCLED TO A DIESEL ENGINE

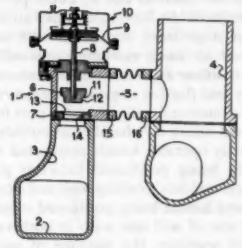
Jean Perez, Rueil Malmaison, and Jean-Claude Carnus, Paris, both of France, assignors to Automobiles Peugeot and Societe Anonyme Automobiles Citroen, both of Paris, France

Filed Oct. 11, 1979, Ser. No. 83,601

Claims priority, application France, Nov. 24, 1978, 78 33196

Int. Cl.³ F02B *33/00*

U.S. Cl. 123—568 **4 Claims**



1. In a device for regulating the amount of exhaust gases recycled to an internal combustion engine having an exhaust pipe and an induction pipe, comprising means defining a passage interconnecting the exhaust pipe and the induction pipe, and valve means inserted in said passage, said valve means comprising a valve body, a seat defining within the valve body an aperture for the exhaust gases and a valve member within the valve body and cooperative with the seat for regulating the flow of the exhaust gases through the aperture; the improvement comprising in combination the feature that a first part of said passage extending from the valve means to the exhaust pipe is larger in section than said aperture and a second part of said passage extending from the valve means to the induction pipe is larger in section than said aperture, and the feature that a part of said passage extending from the valve body to the induction pipe comprises a bellows, whereby said passage and said valve means are heated by the exhaust gases and consequential deformations due to large differences in temperature between the valve means and the induction pipe are accomodated by said bellows.

4,266,525

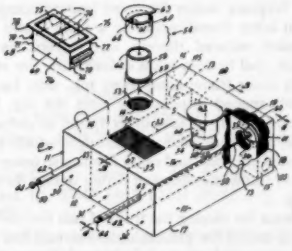
PREFABRICATED FIREPLACE FOUNDATION

John R. Hall, 6962 Paddison Rd., Cincinnati, Ohio 45230, assignor to J. R. Hall and R. J. Hall, both of New Richmond, Ohio

Filed May 25, 1979, Ser. No. 42,323

Int. Cl.³ F24B *7/00*

U.S. Cl. 126—121 **8 Claims**



1. A prefabricated fireplace foundation for installation in a room, said foundation comprising

a foundation box of structurally rigid construction, said

foundation box comprising a ceiling wall, side walls, and a floor wall, said ceiling wall being adapted to receive and support a fireplace floor thereon, and said foundation box's side walls being sized so that said ceiling wall is positionable above said room's floor when said foundation is installed,

at least one intake air chamber defined by said foundation box, said chamber being at least partially defined by said ceiling wall and said floor wall, said intake air chamber including an inlet port for introducing outside air into said intake air chamber and an outlet port for exhausting that atmospheric air from said intake air chamber,

an exhaust air stack connected with said outlet port, said exhaust air stack extending upwardly from said ceiling wall to locate an exhaust air port above said fireplace floor when said floor is constructed on said foundation box,

a valve connected with said inlet port for opening and closing said intake air chamber to outside air, and

a manually operable handle connected with said valve, said handle being positioned between phantom planes that include said box's ceiling wall and floor wall respectively, and said handle being positioned substantially beyond the front one of said side walls in both valve open and valve closed positions, the distance of said handle from said front one of said side walls being such as to position said handle adjacent to and beneath the front edge of a fireplace hearth when said foundation is installed, a fireplace floor positioned thereon, and a hearth extended outwardly from said fireplace floor, thereby permitting access to said handle by a user adjacent the front edge of said hearth between said hearth and said room's floor.

4,266,526

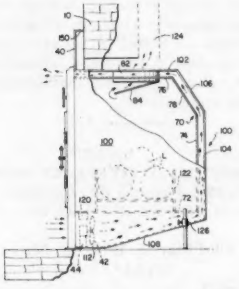
FIREPLACE HEATER

Gregory Tolotti, 35 N. Edison, #20, Reno, Nev. 89502

Filed May 16, 1979, Ser. No. 39,554

Int. Cl.³ F24B *7/00*

U.S. Cl. 126—123 **13 Claims**



1. A fireplace heater for room heating comprising:

(a) an inner frame including a front frame member and a firebox secured thereto, said firebox having top, side, back, and bottom walls defining the fire chamber;

(b) an outer frame comprising top, side, back, and bottom walls spaced respectively from the top, back, side and bottom walls of said inner frame to define bottom, top, side and back channels through which room air to be heated can pass, said outer frame also being secured to said front frame member and fitting within the fireplace opening;

(c) means for closing the front of said firebox including glass door means for gaining access to said fire chamber;

(d) first air inlet means in said front frame above said door means for admitting combustion air to said fire chamber,

(e) flow director means mounted on said front frame behind and communicating with said first air inlet means, said flow director means being formed with downwardly and outwardly tapered side walls whereby the enlarged bottom portion of said flow director means serves to direct incoming room air downwardly across substantially the entire inside surface of said glass door means for maintaining the same clean,

(f) second air inlet means formed in said frame below said door means and communicating with the channels between the bottom and side walls of said firebox and the adjacent spaced walls of said outer frame whereby room air to be heated is directed to said channels, and thereafter to said back and top channels,

(g) damper means for adjustably controlling the admission of room air through said first air inlet means and said flow director for combustion purposes;

(h) air outlet means above said first air inlet means for returning heated air to said room,

(i) fan means associated with one of said second air inlet means and said outlet means for forcibly directing room air to be heated through said channels, and

(j) side panels positioned at the sides of said heater for covering the adjacent walls of said fireplace.

4,266,527

DEVICE FOR PREVENTING OIL SPLASHING AND FIRE OCCURRENCE IN FRYING PAN

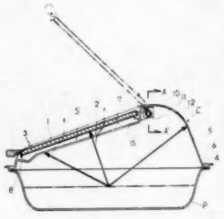
Kyosuke Kato, 58-22, Gejohcho, Kasugai City, Aichi Prefecture, Japan (486)

Filed May 23, 1978, Ser. No. 908,669

Claims priority, application Japan, Jun. 3, 1977, 52-66062

Int. Cl.³ F24C *15/20*

U.S. Cl. 126—299 C **3 Claims**



1. A lid device for preventing oil splashing and the occurrence of a fire in an upwardly concave frying pan, that has an upper perimeter edge portion, said lid device having

(a) generally upwardly convex cover portion that terminates in a lower perimeter edge portion which lies in a plane and that is adapted to engage the upper perimeter edge portion of a frying pan;

(b) an opening in an inclined portion of said upwardly convex cover portion which is large enough for the introduction of food to be cooked, said opening being in a plane which is inclined with respect to a plane passing through the lower perimeter edge portion of said cover portion;

(c) a transparent plate that is at least as great in area as the area of said opening, said transparent plate having an outer perimeter;

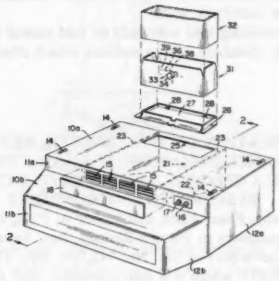
(d) a hinge means connecting said transparent plate to said cover portion so that said transparent plate can be moved from a closed position overlying said opening to an open position allowing access through said opening, and

(e) a circumferential passageway formed between the outer perimeter of said transparent plate and the inner perimeter of said opening when said transparent plate is in its closed position with respect to said cover portion, said passageway serving as an outlet for gases and vapors generated in a frying pan.

4,266,528
DUCTED/DUCTLESS RANGE HOOD

David A. Barnhart, Madiera; Ronald L. Britt, Middletown; John E. Kroger, Centerville, and David A. Walters, Middletown, all of Ohio, assignors to The Celotex Corporation, Tampa, Fla.

Filed Dec. 13, 1978, Ser. No. 969,023
Int. Cl.[3] F24C *15/20*
U.S. Cl. 126—299 D 22 Claims



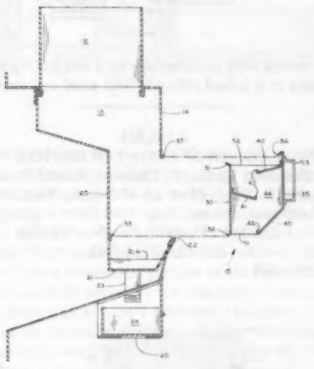
1. A range hood for an enclosure comprising:
(a) a hood including an inner compartment, said compartment having an air inlet aperture and first and second air outlet apertures;
(b) a blower means disposed within said hood and adapted to draw air from said enclosure through said air inlet aperture into said inner compartment and to discharge the air from said inner compartment through said outlet apertures;
(c) a damper member mounted for movement between a first position blocking said first outlet aperture and a second position not blocking said first outlet aperture, said damper member being normally biased to said first, blocking position;
(d) a means for selectively locking or unlocking said damper member in said first position; and
(e) a means independent of said damper member for selectively opening or closing said second outlet aperture,
such that, when said second outlet aperture is open and said damper member is locked in said first position, the air drawn into said inner compartment by said blower means is discharged therefrom through said second outlet aperture and, when said second outlet aperture is closed and said damper member is not locked in said first position, the air drawn into said inner compartment by said blower means moves said damper member to said second position and is discharged out of said first outlet aperture.

4,266,529
KITCHEN VENTILATOR WITH REMOVABLE GREASE EXTRACTOR

Edson C. Gaylord, Wilsonville, Oreg., assignor to Gaylord Industries, Inc., Wilsonville, Oreg.

Filed Sep. 12, 1979, Ser. No. 74,889
Int. Cl.[3] F24C *15/20*
U.S. Cl. 126—299 D 1 Claim

1. In a kitchen ventilator having a removable grease extractor, said ventilator having a vertical back wall, a front wall and a pair of opposite side walls, a grease trough extending parallel with said back wall, and an upstanding edge on the front side of said trough at a distance below a lower end of said front wall; said grease extractor comprising a front panel having a down turned lip on its upper edge arranged to hang on an upturned lip on said lower end of said front wall of the ventilator, so that said front panel forms a downward extension of said lower end of said front wall, a pair of handles on the front side of said front panel, the lower end of said front panel being inclined rearward and downward substantially into said trough behind said upstanding edge on the trough to form an inlet throat opening for the ventilator between said trough and said front panel, a vertical rear panel on said grease extractor having a down turned lip on its lower edge supported on an upturned lip on said back wall of the ventilator, vertical end plates connected to said front and rear panels to form an updraft passageway between said panels for a flow of air from said inlet throat opening, and baffle plates projecting into said passageway from said front and rear panels arranged to change the direction of the whole flow of air through said passageway without dividing the flow, said grease extractor with said baffle plates being removable by said handles by lifting said down turned lips on said front and rear panels of the extractor off said upturned lips on said front and back walls of the ventilator, said baffle plates comprising a baffle plate projecting



rearward and downward from an upper portion of said front panel, and a baffle plate on said rear panel projecting forward and downward below said first baffle plate and above said inclined lower end of said front panel, and upstanding flanges on the lower edges of said baffle plates and the lower edge of said front panel forming grease gutters extending along said lower edges, said flanges terminating at a short distance from said end plates to provide drain openings at the ends of said gutters adjacent said end plates, all the grease extracting baffles in the ventilator and all of the wall surfaces defining said updraft passageway through said baffles being contained in said removable grease extractor for removal as a unit for cleaning, and all of the baffle surfaces and updraft passageway surfaces being exposed at the opposite ends of the grease extractor when the grease extractor is removed for cleaning.

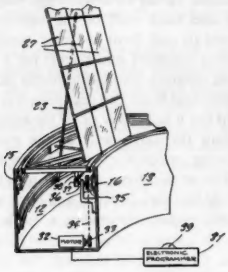
4,266,530
SUN RAY TRACKER

Robert W. Steadman, 1601 Sandhill Rd. Sp. 242, Las Vegas, Nev. 89104

Filed Sep. 27, 1979, Ser. No. 79,478
Int. Cl.[3] F24J *3/02*; F16H *25/12*
U.S. Cl. 126—424 1 Claim

1. A sun ray tracker, comprising in combination: a stationary base, a reflector assembly carried upon said carriage, a solar energy collector at the center of said base, an electronic programmer controlling a motor to turn said carriage, and hinges about which individual reflectors of said reflector assembly can pivot, said base including circular horizontal tracks on

which said carriage moves and a circular, axial cam track, said reflector assembly being controllably tilted as said reflector



assembly moves with said carriage by a rod linking said reflector assembly to a wheel riding in said axial can track.

4,266,531

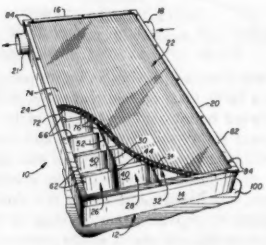
ROOFTOP SOLAR ENERGY COLLECTOR PANEL

Bruce O. Behrendt; Ignacio L. Cisneros; Ronald B. Stephenson, and Donald R. Stephenson, all of Odessa, Tex., assignors to Solar Southwest, Odessa, Tex.

Filed Nov. 13, 1978, Ser. No. 960,303

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—449 **4 Claims**



1. A solar energy collector panel for collecting thermal energy radiating from the sun and transferring the collected energy into air passing therethrough comprising:

an outwardly opening housing having an insulated bottom wall, opposed sidewalls, and opposed endwalls; said sidewalls and said endwalls having a free edge which defines the periphery of the opening into said housing; an air inlet and an air outlet formed into said housing through which air can flow; a closure member attached to the free edge of said sidewalls and endwalls which forms a thermal barrier through which solar energy can travel into the interior of said housing while thermal energy is restricted from traveling away from said housing;

a plurality of parallel, adjacently arranged tunnels through which air can flow, each tunnel having an air inlet and an air outlet, means connecting the outlet of one tunnel to the inlet of an adjacent tunnel, said tunnels being separated from one another by an impervious bulkhead or side wall which extends from said bottom wall into contacting relationship with said closure member;

each tunnel having a multiplicity of adjacent heat transfer members extending from inlet to outlet which absorb solar energy and dissipate thermal energy to any air flowing thereacross, each said heat transfer members comprise adjacent, sloped flat imperforate surfaces which are joined to form an apex at the top thereof and which downwardly slope into contact with the bottom wall, said apex being arranged laterally respective to the flow of air through the tunnel; the apex forming walls of said heat transfer members extend from one sidewall of the tunnel to the opposed sidewall of the tunnel and in contact with each sidewall forming said tunnels;

said apex of said heat transfer member abuts each sidewall of the tunnel and is spaced from said closure member, thereby leaving a flow passageway above said apex through which air can flow through the tunnel in heat contact relationship with the upper surface of the heat transfer members; and,

means providing said sidewalls of said tunnel and said heat transfer members with a surface which absorbs solar energy.

4,266,532

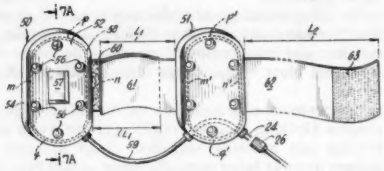
MODIFICATION OF THE GROWTH, REPAIR AND MAINTENANCE BEHAVIOR OF LIVING TISSUES AND CELLS BY A SPECIFIC AND SELECTIVE CHANGE IN ELECTRICAL ENVIRONMENT

John P. Ryaby, Essex Falls, and Arthur A. Pilla, Wyckoff, both of N.J., assignors to Electro-Biology, Inc., Fairfield, N.J.

Continuation-in-part of Ser. No. 742,706, Nov. 17, 1976, Pat. No. 4,105,017, which is a continuation-in-part of Ser. No. 633,408, Nov. 19, 1975, abandoned. This application Mar. 17, 1978, Ser. No. 887,485

Int. Cl.³ A61N *1/40*

U.S. Cl. 128—1.5 **31 Claims**



1. An electromagnetic body-treatment device for surgically non-invasive modification of the growth, repair and maintenance behavior of living tissues and cells by a specific and selective change in electrical environment, comprising two multi-turn electrical coils and body-adapting retaining means adapted to mount said coils in spaced relation on opposite sides of an afflicted body region to be treated, said coils when thus mounted having turns about a flux-development axis through the afflicted body region and being connected in flux-aiding relation, said turns being radially spaced from said axis to an extent establishing an effective local diameter which substantially equals or exceeds the effective axial spacing between said coils, and means for electrically exciting said coils with a succession of low-voltage unidirectional asymmetrical pulses.

4,266,533

MODIFICATION OF THE GROWTH, REPAIR AND MAINTENANCE BEHAVIOR OF LIVING TISSUES AND CELLS BY A SPECIFIC AND SELECTIVE CHANGE IN ELECTRICAL ENVIRONMENT

John P. Ryaby, Essex Fells, and Arthur A. Pilla, Wyckoff, both of N.J., assignors to Electro-Biology, Inc., Fairfield, N.J.

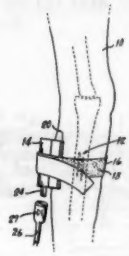
Division of Ser. No. 887,485, Mar. 17, 1978, which is a continuation-in-part of Ser. No. 742,706, Nov. 17, 1976, Pat. No. 4,105,017, which is a continuation-in-part of Ser. No. 633,408, Nov. 19, 1975, abandoned. This application Apr. 9, 1979, Ser. No. 28,456

Int. Cl.³ A61N *1/40*

U.S. Cl. 128—1.5 **13 Claims**

1. An electromagnetic body-treatment device for surgically non-invasive modification of the growth, repair and maintenance behavior of living tissues and cells by a specific and selective change in electrical environment, comprising two multi-turn electrical coils of generally circular configuration

and body-adapting retaining means adapted to mount said coils in spaced relation on opposite sides of an afflicted body region to be treated, said coils when thus mounted having turns about a flux-development axis through the afflicted body region and being connected in flux-aiding relation, said turns being radially spaced from said axis to an extent establishing an effective local diameter which substantially equals or exceeds the effective axial spacing between said coils, and means for electrically exciting said coils with a succession of low-voltage unidirectional asymmetrical pulses.

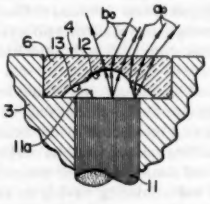


4,266,534

ILLUMINATION UNIT FOR ENDOSCOPE

Mototugu Ogawa, Chofu, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 944,324, Sep. 21, 1978, abandoned. This application May 14, 1979, Ser. No. 38,577
Claims priority, application Japan, Oct. 8, 1977, 52/135697
Int. Cl.³ A61B *1/06*
U.S. Cl. 128—6 **14 Claims**



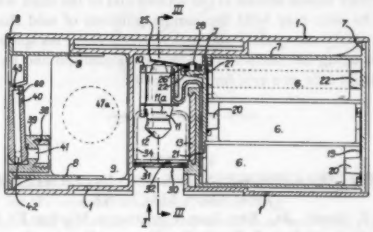
1. An illumination unit for an endoscope comprising a light guide member disposed within a flexible tube of an endoscope for transmitting illumination light that is introduced into the light guide member to an illuminating window provided in the endoscope, a cover glass disposed forwardly of a light exiting end face of the light guide member and located within the illumination window formed at the distal end of the endoscope for directing the illuminating light into a coeloma as the light exits the end face of said light guide member, said cover glass having an entry and an exit surface, at least one of said surfaces having a plurality of substantially concentrically disposed concave lens portions having different radii of curvature to refract the light emitted from the exit surface of the cover glass to a greater degree toward theouter concentric portion thereof than toward the central portion of the cover glass to spread the light illumination over a larger field of view.

4,266,535

DIAGNOSTIC LAMP

Michel A. Moret, Chene-Bourg, Switzerland, assignor to Les Produits Associes BPA SA, Chene-Bourg, Switzerland

Filed Apr. 12, 1979, Ser. No. 29,541
Claims priority, application Switzerland, Apr. 14, 1978, 4020/78
Int. Cl.³ A61B *1/24, 1/06*
U.S. Cl. 128—23 **9 Claims**



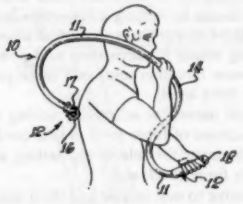
1. A portable diagnostic lamp for fluorescent excitation of a fluorescible material applied to the teeth, which fluorescible material is stimulated essentially by blue light, the lamp comprising: a casing; a small battery-powered incandescent bulb; a filter device adapted to the fluorescent substance and comprising a dichroic filter and a blue color filter whereby the device transmits at least a substantial portion of the spectral range of the incandescent bulb necessary for stimulating the fluorescible material and absorbs at least a substantial portion of the spectral range of the fluorescent light, said filter device defining a rectangular outlet window; a mirror attached to the casing and foldable along a pivot axis, which mirror enables a user to observe the illuminated teeth, the longer sides of the outlet window being parallel to the pivot axis of the mirror; a filament within said incandescent bulb, said filament being arranged at least approximately parallel to the pivot axis of the mirror; and a lens which is located in the path of rays emitted by the incandescent bulb and which provides a diverging emergent beam of rays.

4,266,536

MASSAGING DEVICE FOR BACKS

Robert Casares, 15040 Leffingwell, Apt. 53, La Mirada, Calif. 90638

Filed Dec. 26, 1979, Ser. No. 106,442
Int. Cl.³ A61H *15/00*
U.S. Cl. 128—57 **5 Claims**



1. A massager useful for massaging the user's back vertically along the user's spine, said massager comprising:

a curved shaft having a first end and a second end, said first end having a first handle portion positioned adjacent thereto, said shaft having a first curved portion forming a fulcrum for resting against the user's front side, said shaft extending to a second curved portion in the reverse direction with respect to the first curved portion having a

radius of curvature between about 8 and 32 inches and being sufficiently long so that the shaft may pass over the user's shoulder and reach the upper and lower part of the user's spine and extending sufficiently so that the second end of the shaft is positioned about normal to the back while the first end may be held by the user with the user's elbows in a lowered position, such shaft having a second handle portion located intermediate said first and second ends; and

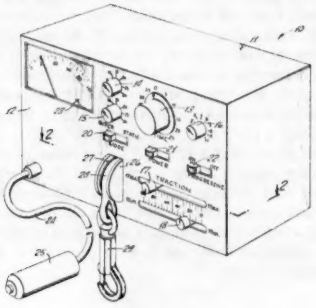
a roller means affixed at the second end of the shaft whereby the user may hold the handle portions of said shaft and readily manipulate said roller means along his spine while keeping his elbows in a downward position and using his front side as a rest for the fulcrum.

4,266,537

PORTABLE PROGRESSIVE AND INTERMITTENT TRACTION MACHINE

Pete J. Bonin, Jr., San Juan Capistrano; Marion E. Evans, Orange, and Pete J. Bonin, Sr., Newport Beach, all of Calif., assignors to IMC International Management Consultants, Inc., New York, N.Y.

Filed Jul. 18, 1977, Ser. No. 816,818
Int. Cl.[2] A61H 1/02
U.S. Cl. 128—75 **14 Claims**



1. A traction machine for applying a force to a patient comprising:

a cord adapted to receive a traction harness at one end thereof;

power means coupled to said cord for applying a force thereto;

means for sensing the level of said force in said cord;

first manual means for setting a maximum force level;

first drive means responsive to said first manual means and said sensing means for activating said power means in a force increase direction until said force reaches said set maximum force level;

second manual means for selectively setting a level of progressive increase of force level in said cord;

third manual means for selectively setting a time at each progressive force level; and

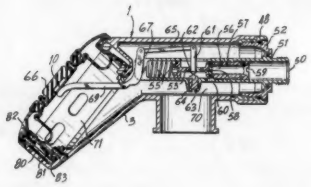
means responsive to said second and third manual means for intermittently deactivating said power means after each set progressive increase in said force level for the time set by said third manual means, said power means maintaining said force on said cord during said time set by said third manual means, said power means being operative, at the end of said time set by said third manual means, to increase said force level in said cord, whereby said force is applied continuously and progressively until said force reaches said set maximum force level.

4,266,538

PRESSURE REGULATOR

Heinz Ruchti, Lenzburg, Switzerland, assignor to General Diving Corporation, Santa Fe Springs, Calif.

Filed May 8, 1979, Ser. No. 33,731
Int. Cl.[3] A62B 7/04
U.S. Cl. 128—204.26 **3 Claims**



1. An improved underwater diving regulator comprising:

(a) a first stage regulator receiving breathable gas from a supply tank,

(b) a flexible conduit connected on one end to said first stage regulator,

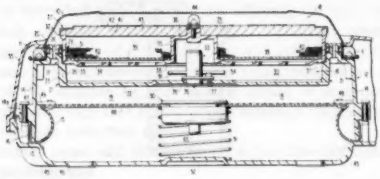
(c) a second stage regulator having a mouthpiece and being connected to the other end of said flexible conduit providing said breathable gas to a diver via said mouthpiece in response to inhalation demand and further comprising a second stage housing including an inlet chamber to which said flexible conduit is connected and an outlet chamber communicating, with said mouthpiece, diaphragm means in said outlet chamber and responsive to the pressure therein for sensing said inhalation demand, said second stage housing comprising an internal cylindrical valve housing, said cylindrical valve housing having a threaded orifice in its peripheral side-wall and an adjustment screw threadingly engaged in said threaded orifice and an aspirator opening through the wall of said cylindrical valve housing communicating with said outlet chamber, a lever pivotally connected with respect to said second stage valve housing and having one end of said lever in contact with said diaphragm means for sensing its movement, a rod having one end connected to the other end of said lever for transmitting said movements of the diaphragm, a pin having one end connected to the other end of said rod said cylindrical valve housing having an elongated side-wall opening directly opposite said adjustment screw, a piston member slidingly received within said cylindrical valve housing and having a piston plunger at one end and a piston closing head at the other end, a hollow cylinder screwed inside of said cylindrical valve housing and having a valve seat at its inner end against which said piston closing head is seatable said piston member having a transverse opening intermediate its ends adjacent said elongated side-wall opening and said adjustment screw, compression spring means yieldingly constraining said closing head end of said piston member in seating engagement with the valve seat of said hollow cylinder, said pin extending through said elongated side-wall opening in said cylindrical valve housing, through said transverse opening in said piston member and hinged at its other end to the inner tip of said adjustment screw for amplifying the force transmitted from said rod to said piston member.

4,266,539

CARBON DIOXIDE SCRUBBER AND GAS REGENERATOR UNIT FOR A CLOSED CIRCUIT REBREATHING APPARATUS

Frederick A. Parker, Broomall, and Mark P. Grady, Norristown, both of Pa., assignors to Rexnord Inc., Milwaukee, Wis.

Filed May 15, 1979, Ser. No. 39,235
Int. Cl.[3] A62B 7/10, 7/04
U.S. Cl. 128—204.26 19 Claims



1. In a closed circuit rebreathing apparatus having breathing exhale and inhale circuit means and gas conditioning means connected between said exhale and inhale circuit means, the improvement wherein said gas conditioning means comprises a hollow frame member having an open bottom end defined by the lower edge of an annular outer peripheral wall extending upwardly to an upper pan section extending transversely across the span of said outer annular peripheral wall, a flexible diaphragm extending transversely of and sealingly secured around its periphery to said frame outer peripheral wall adjacent said frame open end, the space enclosed within said outer peripheral wall, said upper pan section and said flexible diaphragm defining a variable volume gas chamber, said upper pan section comprising a dish shaped portion having an imperforate central portion extending transversely of and concentrically within an annular wall section extending upwardly from the outer periphery of said central portion to an annular shoulder joining said frame outer annular peripheral wall and the annular wall of said pan dish shaped portion, said frame annular shoulder having a plurality of passages spaced along its circumference connecting the span above said upper pan to said variable gas volume chamber, a carbon dioxide removal canister supported in said pan dish shaped portion, said carbon dioxide removal canister having perforated upper and lower surfaces and configured to sealingly fit within said dish shaped portion with the lower surface of an installed canister in a spaced relation to said pan central portion in defining a lower gas conditioning chamber between said pan dish shaped portion and said canister lower surface, a top cover releasably affixed to said frame and extending across the span of said frame outer peripheral wall in spaced relation to the top surface of said carbon dioxide removal canister, the spaces enclosed between said top cover and said canister top surface defining an upper gas conditioning chamber connecting to said variable volume gas chamber by said frame shoulder passages, means supplying predetermined amounts of make-up oxygen to the gases passing through said gas conditioning means, means connecting to said exhale circuit means for forming an exhale passage extending through said frame outer peripheral wall, said variable volume gas chamber and said pan dish shaped portion annular wall into said lower gas conditioning chamber, and means connecting to said inhale circuit means for forming an inhale passage extending through said frame outer peripheral wall into said variable volume gas chamber.

4,266,540

NASAL OXYGEN THERAPY MASK

Donald Panzik, 47 Ballantine Rd., Rochester, N.Y. 14623, and David Smith, P.O. Box 197, Avoca, N.Y. 14809

Filed Oct. 13, 1978, Ser. No. 951,744
Int. Cl.[3] A61M 15/00
U.S. Cl. 128—207.13 4 Claims

1. Apparatus for administering a select mixture of gases to a patient for therapeutic treatment, comprising:

a mask shell generally adapted to fit over and cover a patient's nose while leaving the mouth free to perform oral functions, said mask shell having an opening therein for exhalation of gases by said patient; and

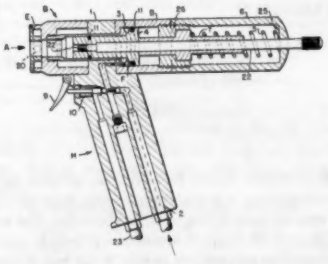
a mixing valve connected to said mask shell, said mixing valve with said masked shell being formed as a one-piece structure, said mixing valve further comprising means for providing a stream of a therapeutic gas therethrough and into said mask shell, and a fixed aperature of predetermined size in a side of said mixing valve in communication with said stream to permit a predetermined volume of ambient air to be entrained into said mixing valve for mixing with said therapeutic gas, wherein dimensions of said aperature are selected to provide a fixed percentage of ambient air in a mixture of ambient air and said therapeutic gas whereby said apparatus can be prescribed by a physician to provide a precise therapeutic gas/air mixture to a patient.

4,266,541

PRESSURE HYPODERMIC INJECTOR FOR INTERMITTENT VACCINATION

Sergio Landau, Rio de Janeiro, Brazil, assignor to Halen-Elliot do Brazil Industria e Comercio Equipamentos de Precisao Ltda., Rio de Janeiro, Brazil

Filed Sep. 17, 1979, Ser. No. 76,456
Claims priority, application Brazil, Apr. 26, 1979, 780153
Int. Cl.[3] A61M 5/00
U.S. Cl. 128—207.23 5 Claims



1. In a hydraulic pressure actuated hypodermic injector for intermittent vaccination the combination comprising, a first part in the general shape of a postol including a hand grip and a barrel, a hydraulic assembly for storage of energy housed within said first part, a pressure chamber within said hydraulic assembly, valve means controlling hydraulic pressure within

the pressure chamber, a second part comprising a vaccine suction and injection assembly, means on each of said parts whereby they may be quickly connected and disconnected one from the other without entrance of air into either of the two assemblies particularly into the ducts and places where vaccine is circulated and stored.

4,266,542
EVA FORMULATION HAVING IMPROVED PROPERTIES

Lawrence F. Becker, Chicago; Leonard F. Czuba, Lombard, and Dean G. Laurin, Lake Zurich, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Dec. 14, 1978, Ser. No. 969,637
Int. Cl.[2] A61M *5/14*; C08L *23/08, 31/04*
U.S. Cl. 128—214 R **14 Claims**

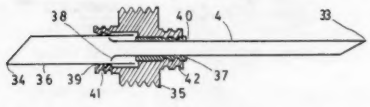
1. A thermoplastic composition which consists essentially of:
(a) from 75 to 90 percent by weight of a first poly(ethylene-vinyl acetate) copolymer which contains from 22 to 30 percent by weight of vinyl acetate units, said first copolymer exhibiting a melt index of 0.5 to 10; and
(b) from 10 to 25 percent by weight of a second poly(ethylene-vinyl acetate) copolymer which contains from 25 to 40 percent by weight of vinyl acetate units, said second copolymer exhibiting a melt index of 20 to 1000.

8. A set for administering medical fluid to a patient which comprises a length of flexible tubing, means for communication of said tubing at one end with a source of medical liquid, and means for communication of said tubing at its other end with the patient, said tubing comprising a thermoplastic composition which consists essentially of:
(a) from 75 to 90 percent by weight of a first poly(ethylene-vinyl acetate) copolymer which contains from 22 to 30 percent by weight of vinyl acetate units, said first copolymer exhibiting a melt index of 0.5 to 10; and
(b) from 10 to 25 percent by weight of a second poly(ethylene-vinyl acetate) copolymer which contains from 25 to 40 percent by weight of vinyl acetate units, said second copolymer exhibiting a melt index of 20 to 1000.

4,266,543
HYPODERMIC NEEDLE PROTECTION MEANS

Alvin S. Blum, 2350 Del Mar Pl., Fort Lauderdale, Fla. 33301

Filed Feb. 22, 1979, Ser. No. 13,911
Int. Cl.[3] A61M *5/00*
U.S. Cl. 128—218 N **10 Claims**

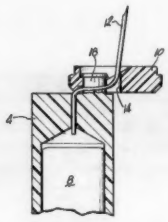


1. A hypodermic needle for syringes, infusion devices, and the like comprising: a hypodermic needle shaft having a distal pointed end for puncturing skin, medicament vial enclosures, and the like; needle support means at a proximal region of said shaft arranged to support the needle at the end of said syringe for use, said shaft being held within said support means by said fastening means arranged firstly to hold said needle under forces against said point necessary for ordinary usage and arranged secondly to yield slidably under some greater force against said point, causing said shaft to slide within said support means until said point is surrounded, protected and held in place by said support means.

4,266,544
HYPODERMIC SYRINGE

Stephen C. Wardlaw, 128 Sunset Hill Dr., Branford, Conn. 06405

Filed Nov. 9, 1979, Ser. No. 93,134
The portion of the term of this patent subsequent to Feb. 19, 1997, has been disclaimed.
Int. Cl.[3] A61M *5/00*
U.S. Cl. 128—218 N **8 Claims**

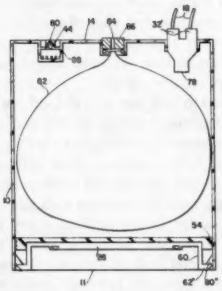


1. An improved disposable syringe adapted to be used but once, said syringe comprising:
(a) a hollow tubular portion for containing a medicament dose, and a hypodermic needle secured to one end of said tubular portion and projecting therefrom;
(b) means in said hollow tubular portion for pumping a dose of medicament therefrom through said needle; and
(c) retracting means movably mounted on said housing, said retracting means being operable to engage said needle and bend the latter to pull said needle from its projecting position to a safe position wherein said needle is covered over by a portion of said syringe.

4,266,545
PORTABLE SUCTION DEVICE FOR COLLECTING FLUIDS FROM A CLOSED WOUND

James P. Moss, 250 E. Liberty St., Louisville, Ky. 40202

Filed Apr. 6, 1979, Ser. No. 27,835
Int. Cl.[3] A61M *1/00*
U.S. Cl. 128—278 **5 Claims**



1. A closed wound suction device for collection of fluids from the area of tissue behind a closed wound comprising:
a rigid container having an end wall and a peripheral side wall connected thereto, said rigid container having an opening in at least a portion of the end opposite the end wall between the peripheral enclosing side wall;
movable piston closure means including a rigid wall for the opening of said container, said closure means being slidably movable in said container from a position in the interior of said container in a direction away from the end wall towards the opening;

sealing means for providing an air tight seal between said closure means and said rigid container;

a resilient lubricated balloon means located inside of said rigid container between said closure means and said closed end and normally occupying a small volume in an uninflated state, the interior of said balloon means being in fluid communication with the atmosphere;

a variable volume pressure collection chamber for receiving the collected body fluids located between the outer surface of said balloon means and the interior surfaces of said container and said closure means;

means for moving said closure means from a retracted, inoperative position within the interior of said container to an extended operative position adjacent the open end of said container whereby a negative pressure is created in said pressure collection chamber, the negative pressure in said pressure collection chamber being reduced as a result of the inflation of said balloon means in said pressure chamber such that a controlled vacuum is obtained in said pressure collection chamber;

means to retain said closure means in the extended operative position; and

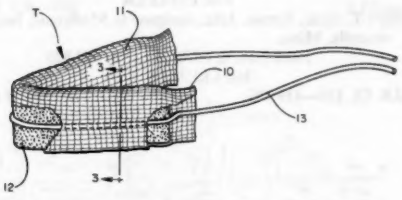
port means in said rigid container in fluid communication with said pressure collection chamber and connectable in fluid communication with the closed wound whereby body fluids are drained from the closed wound to said pressure chamber, the negative pressure in said pressure chamber being maintained in said pressure chamber despite the introduction of fluid therein due to the shrinking volume of said balloon means as said balloon means is resiliently urged towards the uninflated position as the fluids enter said pressure chamber.

4,266,546

WRAPPED FOLDED TAMPONS

David R. Roland, Winneconne, and Edward G. Wollangk, Oshkosh, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Feb. 25, 1980, Ser. No. 124,620
Int. Cl.³ A61F *13/20*
U.S. Cl. 128—285 **9 Claims**



1. A tampon comprising a foldable absorbent material having a long axis and a short axis;

a fluid pervious outer wrap disposed around the absorbent core with the long axis oriented edges of the wrap being overlapped and sealed;

a withdrawal string attached to the outer wrap at the overlapped edges;

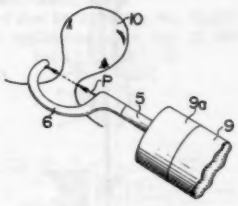
the tampon being folded across the short side with the withdrawal string and the overlapping wrap disposed on the outer surface of the tampon.

4,266,547

LASER KNIFE

Osamu Komiya, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1978, Ser. No. 904,468
Claims priority, application Japan, May 16, 1977, 52/56634; May 16, 1977, 52/56636
Int. Cl.³ A61B *17/36*
U.S. Cl. 128—303.1 **36 Claims**



1. A laser knife comprising a tubular member having a first end and a second end, said second end of said tubular member being adapted to be inserted into the forceps channel of an endoscope which is to be inserted into a physical body, so that said first end of said tubular member can remain outside of said physical body upon insertion of said endoscope into said physical body, first laser radiation transmission means having a first end and a second end and being continuous therebetween, a laser oscillator for supplying laser radiation to said first laser radiation transmission member, said laser oscillator being capable of emitting a beam with power sufficient to cauterize human tissue, said first laser radiation transmission means being disposed within said tubular member for conveying laser radiation uninterruptedly between said first end of said first laser radiation transmission means and said second end of said first laser radiation transmission means, said second end of said first laser radiation transmission means being disposed at said second end of said tubular member and said first end of said first laser radiation transmission means being disposed at said first end of said tubular member, and second laser radiation transmission means having a first end and a second end and being continuous therebetween, said second laser radiation transmission means being disposed within said tubular member for conveying laser radiation uninterruptedly between said first end of said second laser radiation transmission means and said second end of said second laser radiation transmission means, said second end of said second laser radiation transmission means being disposed at said second end of said tubular member and said first end of said second laser radiation transmission means being disposed at said first end of said tubular member, said second end of said first laser radiation transmission means being disposed in optical alignment with said second end of said second laser radiation transmission means so that laser radiation can be transmitted therebetween.

4,266,548

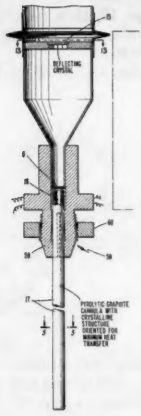
APPARATUS FOR AND METHOD OF UTILIZING ENERGY TO EXCISE PATHOLOGICAL TISSUE

S. K. Davi, 4620 N. Park Ave., Apt. 1408 West, Chevy Chase, Md. 20015

Filed Dec. 18, 1978, Ser. No. 970,132
Int. Cl.³ A61B *17/00*; A61N *5/01*
U.S. Cl. 128—303.1 **20 Claims**

1. An instrument for excising pathological tissue from a living animal organism comprising means for emitting a beam of coherent optical radiation, collimating means responsive to the beam for reducing the beam cross sectional area, a pyrolytic graphite cannula having an optically transparent interior responsive to the reduced diameter beam, said cannula coupling the reduced diameter beam onto the tissue so the tissue is irradiated by the beam, said reduced diameter beam having

sufficient energy to vaporize the irradiated tissue, the graphite of the cannula having a crystalline structure orieinted whereby

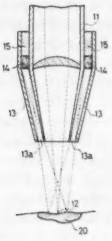


heating of the cannula interior by radiation from the beam is not substantially transferred by conduction to the exterior of the cannula.

4,266,549
LASER SCALPEL

Hiroaki Kimura, 57-69, Yamaquchi, Tokowzawa-shi, Saitama-ken, Japan

Filed Apr. 18, 1979, Ser. No. 31,209
Claims priority, application Japan, Oct. 12, 1978, 53-124589
Int. Cl.[3] A61B *6/08;* **A61N** *5/06*
U.S. Cl. 128—303.1 **5 Claims**



1. In a laser scalpel comprising a laser beam generator capable of generating energy sufficient to vaporize human tissue, a laser beam manipulator having a laser beam entrance end and a laser beam emitting end, a mixing filter, said laser beam generator and said mixing filter being arranged such that the laser beam from said generator is directed through said mixing filter and into said entrance end, a beam shutter positioned such that it may interrupt said laser beam when desired, a guide light source arranged such that the light from said source is directed through said mixing filter into said entrance end whereby during use of said scalpel said guide light is irradiated onto approximately the focal point of the laser beam emitted from said manipulator emitting end, the improvement which comprises:

said guide light emits substantially only light having wavelengths between about 3,950 to 4,200 Å,

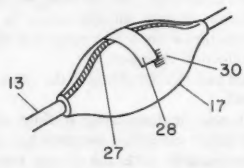
a radiation detector fitted upon said laser beam emitting end of said manipulator capable of capturing radiation emitted from a surface located approximately at said focal point of said laser beam, said detector being responsive only to light within a wavelength range different from the wavelength of said guide light, and

means to convert radiation captured by said detector into an electric signal.

4,266,550
PRESSURE INDICATORS FOR INFLATABLE CUFF-TYPE CATHETERS

James D. Bruner, 6054 S. Krameria, Englewood, Colo. 80110

Division of Ser. No. 758,309, Jan. 10, 1977, Pat. No. 4,185,638, which is a division of Ser. No. 591,601, Jun. 30, 1975, Pat. No. 4,016,885. This application Sep. 7, 1979, Ser. No. 73,944
Int. Cl.[3] A61M *16/00, 25/00*
U.S. Cl. 128—349 B **3 Claims**

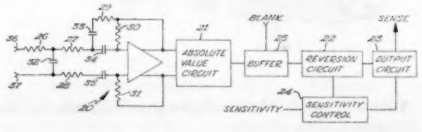


1. An inflatable cuff-type chatheter for insertion into a body passage comprising in combination a flexible tube having distal and proximal ends, at least one gas inflatable cuff encircling the flexible tube near the distal end and having opposite ends sealed thereto; a branched tube connected at an inner end to the interior of the cuff; and an inflation means and a pressure indicator means connected in series to the cuff through the outer end of the branch tube for access outside the body passage, the indicator means comprising an expandable chamber having a substantially "V"-shaped longitudinal depression therein, a top section bridging the "V"-shaped depression at about the circumference of the chamber and secured to the chamber on one side of the "V"-shaped depression; the chamber having indicia on the circumferal surface beneath the non-adhered portion of the top section, wherein the chamber is adapted upon expansion to progressively expose the indicia from beneath the top section to indicate the gas pressure within the inflatable cuff.

4,266,551
SENSE AMPLIFIER FOR DEMAND CARDIAC PACEMAKER

Marc T. Stein, Tempe, Ariz., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Nov. 6, 1978, Ser. No. 957,825
Int. Cl.[3] A61N *1/36*
U.S. Cl. 128—419 PG **7 Claims**

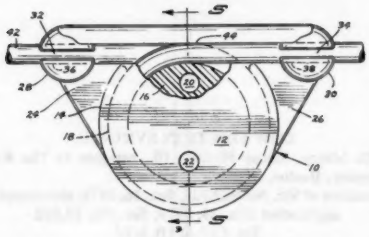


1. In a cardiac pacemaker of the type having means for sensing heart activity and detecting means responsive to the sensing means for providing a response on detecting the presence of signals representative of natural heart activity within the signals sensed by said sensing means, the improvement which comprises means responsive to said detecting means response for speeding the response of said detecting means to said signals representative of natural heart activity.

4,266,552
LEAD ANCHORING BOBBIN

Robert G. Dutcher, Minneapolis, and Edward G. O'Neill, St. Paul, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Nov. 13, 1979, Ser. No. 93,342
Int. Cl.³ A61N 1/00
U.S. Cl. 128—419 P **6 Claims**



1. Lead anchoring bobbin for use with an implantable lead having proximal and distal ends for attaching to human tissue comprising:

a. anchoring means having two diametrically opposed partial circumferential discs and a partial truncated disc of a smaller diameter than said two discs, said smaller partial circumferential disc positioned and secured between said two partial circumferential discs, whereby said implantable lead is anchored within a groove formed between said two partial circumferential discs;

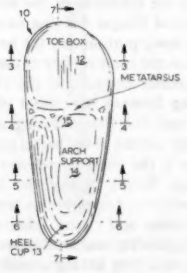
b. at least one retaining means adjacent to said anchoring means for frictionally retaining said implantable lead adjacent to said anchoring means having at least one wing extending outwardly from one of said two partial circumferential discs, said wing including a button having a hole and a slit to said hole whereby said hole retains said lead within said button; and

c. at least one suturing means for suturing said anchoring means retaining said loop to said human tissue whereby said anchoring means provides for anchoring of said implantable lead to tissue.

4,266,553
FOOTGEAR EMBODYING PODIATRIC SOLE

Joseph V. Faiella, 9 Northern Blvd., Greenvale, N.Y. 11548

Filed Oct. 22, 1979, Ser. No. 87,253
Int. Cl.³ A61F 5/14
U.S. Cl. 128—585 **1 Claim**



1. Footgear embodying a podiatric sole forming an integral part of the inside of the footgear and extending from the heel to the toe through the metatarsus, the said sole comprising:

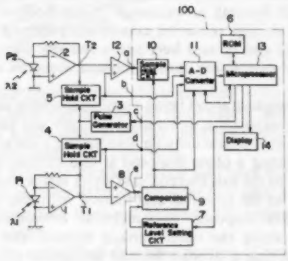
a forefoot wedge across the sole behind the metatarsus heads, which wedge may vary between 0.5° and 6° with respect to the plane across the bottom of the footgear in the toe area;

whereby the wedge inverts the forefoot the required number of degrees to eliminate abnormal motion and maintain the foot in a near normal position.

4,266,554
DIGITAL OXIMETER

Kenji Hamaguri, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jun. 19, 1979, Ser. No. 50,097
Claims priority, application Japan, Jun. 22, 1978, 53-76084
Int. Cl.³ A61B 5/00
U.S. Cl. 128—633 **5 Claims**



1. A digital oximeter for noninvasively measuring oxygen saturation of the arterial blood comprising:

means for measuring light intensity after contact with living tissue to produce at least first and second time-spaced signals representative of the intensity of measured light at a first wavelength and first and second time-spaced signals representative of the intensity of measured light at a second wavelength;

means for correspondingly storing each of said first signals;

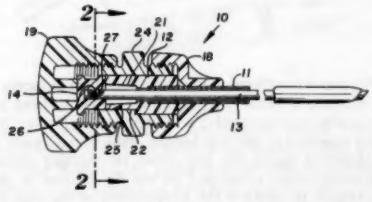
means for practicing subtractions between said first and second time-spaced signals of a first wavelength, and between said first and second time-spaced signals of a second wavelength to correspondingly produce at least first and second subtraction outputs, respectively; and

means for processing at least said first signals from the storing means and said first and second subtraction outputs from the subtraction practicing means to indicate the oxygen saturation.

4,266,555
BIOPSY NEEDLE WITH STYLET AND CANNULA ORIENTATION

Khosrow Jamshidi, 610 Winston Ct., St. Paul, Minn. 55118

Filed Nov. 9, 1979, Ser. No. 92,685
Int. Cl.³ A61B 10/00
U.S. Cl. 128—753 **3 Claims**



1. An elongated hollow biopsy needle assembly with open distal and proximal ends, and with the distal end defining a

cutting edge, said assembly including a cannula, an elongated stylet removably received within the bore of said cannula, a finger gripping means, and coupling means for orienting said stylet within said cannula and for releasably securing said cannula to said finger gripping means.

(a) said cannula being of uniform hollow, cylindrical configuration throughout the major portion of its length and having an external distal end surface tapered generally uniformly, uninterrupted, toward the tip of the distal end, and an internal end surface defining an inner biopsy tissue receiving and retaining bore immediately adjacent the distal end and with the distal end of said cannula terminating along a plane disposed at a certain acute angle relative to the axis of said cannula;

(b) a generally cylindrical hub having a bore extending axially therethrough and securing the proximal end of said cannula to the inner diameter thereof, and with the bore of said hub forming an extension of the hollow cannula, a conical syringe receiving counterbore formed within the proximal end of said hub, and a radially disposed asymmetrical orientation surface formed along an end of said hub;

(c) said elongated stylet being positioned within said cannula and corresponding generally in length and shape to the bore formed in said cannula, and having a distal end terminating along a plane disposed at said certain acute angle relative to the axis thereof, said stylet further having a cap secured to the proximal end thereof with said cap having a radially disposed asymmetrical orientation surface formed along the outer surface thereof, and with said stylet having a groove formed along the proximal end thereof and with said cap having a tongue extending radially inwardly and arranged to mate with said groove for orienting said stylet relative to said cap;

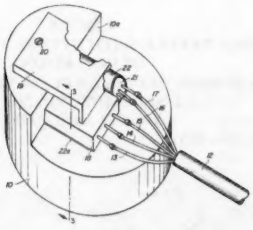
(d) said finger gripping means including a generally centrally disposed coupling means with an inner surface having a radially extending asymmetrical surface mating with the radially disposed asymmetrical orientation surfaces of each of said cylindrical hub and said stylet for orienting said cannula relative to said stylet cap to present a closed symmetrical end surface.

4,266,556

ELECTRICALLY HEATED SWEAT COLLECTION DEVICE AND METHOD

Wayne K. Barlow, and Wallace A. Gibbons, both of Logan, Utah, assignors to Wescor, Inc., Logan, Utah

Filed Oct. 26, 1978, Ser. No. 955,093
Int. Cl.[3] A61B *19/00*
U.S. Cl. 128—760 **8 Claims**



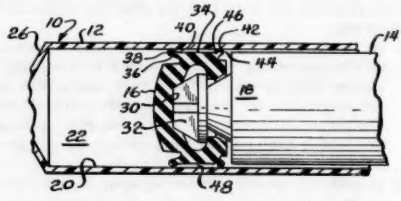
1. For use in combination with equipment for inducing sweat from humans, a sweat collection device, comprising a thermally conductive cup having a flat bottom; an electric heating element attached to the cup bottom flatwise exteriorly of the cup; electrical means for energizing the heating element; a temperature sensor positioned on the flat bottom of the cup and arranged to monitor the temperature of the cup; a thermally conductive pad positioned between the heating element and the flat bottom of the cup; mechanical means clamping the heating element against said pad; and means electrically connected between the temperature sensor and the means for energizing the heating element so that the temperature of the cup is maintained at a constant preset temperature.

4,266,557

LOW FRICTION SYRINGE

Jack D. Merry, Sleepy Hollow, Ill., assignor to The Kendall Company, Boston, Mass.

Continuation of Ser. No. 869,729, Jan. 16, 1978, abandoned. This application Jun. 29, 1979, Ser. No. 53,492
Int. Cl.[3] A61B *5/14*
U.S. Cl. 128—763 **3 Claims**



1. A low friction syringe, comprising:

a barrel having an inner surface defining a chamber;

a plunger having a distal end received in the barrel chamber; and

a plug of elastic material received in said chamber and having a body portion secured to said distal end of the plunger, said plug having a first annular flange extending forwardly from said body portion, said first flange having an enlarged outer annular lip lightly contacting the inner surface of said barrel, and an annular hinge portion adjacent said body portion of reduced thickness relative the thickness of said lip, said plug having a second annular flange extending rerwardly from the body portion, said second flange having an enlarged outer annular lip lightly contacting the inner surface of said barrel, and an annular hinge portion adjacent said body portion of reduced thickness relative the thickness of the second flange lip, said first and second flanges defining an annular cavity intermediate the body portion and the barrel, said first flange flexing against the inner surface of the barrel responsive to a slightly greater pressure in the chamber relative the cavity during forward movement of the plunger in the barrel, and said first flange flexing about its hinge away from the inner surface of the barrel responsive to a slightly less pressure in the chamber relative the cavity and said second flange flexing against the inner surface of the barrel responsive to a slightly less pressure in the communicating chamber and cavity relative the pressure rearward the plug during rearward movement of the plunger in the barrel, said plug having a width between inner ends of said hinge portions of the first and second flanges substantially greater than the thickness of the first and second flanges, such that said plug flexes substantially only in said flange portions and the second flange contacts the barrel during said forward and rearward movements of the plunger in the barrel.

4,266,558

METHOD OF COLLECTING AND DISPENSING A BLOOD SAMPLE

David S. Akhavi, Los Angeles, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Apr. 2, 1979, Ser. No. 25,979
Int. Cl.[3] A61B 5/14
U.S. Cl. 128—766 18 Claims

1. A method of collecting an arterial blood sample comprising the steps of:

(a) puncturing an artery with a needle attached to an inlet of a reservoir containing a gas, which reservoir has an outlet;

(b) forcing at least a portion of the gas out of the outlet with arterial blood pressure while maintaining a collected arterial blood sample confined within the reservoir; and

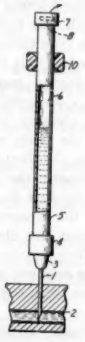
(c) closing the reservoir at a location between the reservoir's inlet and outlet to segment the collected blood sample.

4,266,559

BLOOD SAMPLER

David S. Akhavi, Los Angeles, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Apr. 2, 1979, Ser. No. 25,980
Int. Cl.[3] A61B 5/14
U.S. Cl. 128—766 33 Claims



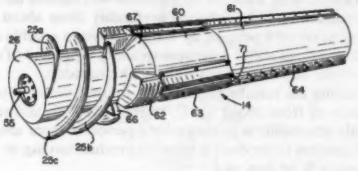
1. An arterial blood sampler comprising: a needle; a blood reservoir with an inlet connected to the needle and having a gas therein, which reservoir has an outlet of sufficient size for passage of at least a portion of such gas through the outlet in response to arterial blood pressure; valve means on the outlet preventing the escape of arterial blood from the reservoir; and segmenting means for closing the reservoir between the reservoir's inlet and outlet to segment a collected blood sample.

4,266,560

ROTOR FOR AN AXIAL FLOW COMBINE

Thomas E. Powell, and Shiro T. Ito, both of Brantford, Canada, assignors to White Motor Corporation of Canada, Limited, Brantford, Canada

Filed Mar. 8, 1979, Ser. No. 18,679
Claims priority, application Canada, Jan. 12, 1979, 319583
Int. Cl.[3] A01F 12/18
U.S. Cl. 130—27 T 5 Claims



1. An axial flow combine rotor adapted to be mounted coaxially in a generally cylindrical rotor casing including a concave in the lower portion thereof, said rotor comprising:

a generally cylindrical core tube;

flighting helically disposed about said core tube at an inlet end for moving crop materials at low crop pressures axially along said inlet end between the core tube and the rotor casing;

a generally cylindrical threshing portion of larger diametric dimension than said core tube;

threshing rasp bars affixed to said threshing portion of the rotor at circumferentially spaced locations thereabout to project from the surface of said threshing portions, said rasp bars adapted for threshing the crop materials against the concave of the rotor casing;

a plurality of threshing elements rising from said core tube adjacent a threshing area of said rotor casing, said threshing elements defining a diameter approximate to that of the rasp bars said threshing elements adapted to thresh coarse crop materials such as ears of corn or to comb finer cereal grains into a mat prior to threshing by the rasp bars; and

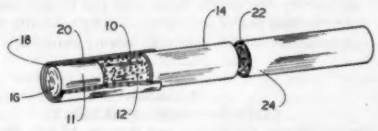
a frusto-conical portion disposed between said core tube and said threshing portion, wherein at least a portion of said threshing elements is disposed on said frusto-conical portion.

4,266,561

TOBACCO SMOKE FILTERING COMPOSITIONS

Elmer F. Litzinger, Louisville, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Apr. 10, 1978, Ser. No. 895,220
Int. Cl.[3] B01D 53/14, 59/28; A24D 3/14, 3/16
U.S. Cl. 131—341 15 Claims



1. In a filter structure, a composition, which comprises: alumina impregnated with polyethyleneimine, acetic acid and zinc acetate wherein the proportion of polyethyleneimine is from about 2 to 9 percent by weight of alumina, the proportion of zinc acetate is from about 0.5 to 5 percent by weight of alumina and the proportion of acetic acid being sufficient to give a final pH of from 6.0 to 7.6.

4,266,562
PROCESS FOR PUFFING TOBACCO

Henry B. Merritt, Richmond, Va., and George F. Kite, Indianapolis, Ind., assignors to Philip Morris Incorporated, New York, N.Y.

Filed May 17, 1979, Ser. No. 39,754
Int. Cl.[3] A24B *3/18*
U.S. Cl. 131—293 **3 Claims**

1. The process of expanding tobacco which comprises the steps of:

(a) contacting tobacco having at least 6 percent by weight moisture with a source of ammonia and carbon dioxide to introduce into the tobacco preferably from about 3 percent to about 6 percent by weight of water-soluble ammonia and from about 3 percent to about 8 percent of carbon dioxide, based on the weight of the tobacco,

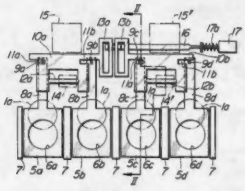
(b) heating the resulting tobacco in an open vessel at temperatures of from about 80° C. to about 120° C. and substantially atmospheric pressure for a period of from about 5 to 60 minutes to produce a tobacco product having an OV of about 6% or less, and

(c) thereafter expanding the tobacco product with dry steam at a temperature of from about 100° C. to about 150° C. or a water vapor-containing gas at a temperature of from about 80° C. to about 150° C. and above the dew point of the gas for a time sufficient to expand the tobacco.

4,266,563
COIN DISPENSER DEVICE

Niitaka Fujita, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd, Osaka, Japan

Filed Mar. 7, 1980, Ser. No. 128,115
Claims priority, application Japan, Mar. 9, 1979, 54-28091
Int. Cl.[3] G07D *9/04*
U.S. Cl. 133—4 A **2 Claims**



1. A coin dispenser device comprising:

i. at least a pair of coin storing cylinders;

ii. at least a pair of slide plates disposed in opposition to said coin storing cylinders, and longitudinally movable so as to dispense coins from said coin storing cylinders;

iii. at least one change-over plate disposed in opposition to said pair of slide plates, and longitudinally and laterally movable;

iv. at least one driving solenoid arranged to longitudinally move said change-over plate;

v. means for laterally moving said change-over plate so as to selectively engage the latter with one of said slide plates, thereby said one of slide plates is longitudinally moved to dispense coins from said coin storing cylinders.

4,266,564
COIN RELEASE ASSEMBLY

C. David Coburn, Muskogee, and Rex M. Maloy, Broken Arrow, both of Okla., assignors to Orin W. Coburn, Muskogee, Okla.

Filed Oct. 1, 1979, Ser. No. 80,681
Int. Cl.[3] G07D *1/00*
U.S. Cl. 133—5 R **20 Claims**

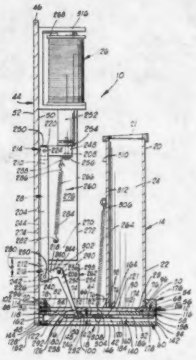
1. A coin release assembly for selectively removing a coin element therefrom, the assembly comprising:

a base plate having an opening extending therethrough and a recessed portion for slidably receiving the coin ejecting assembly;

a coin tube having a first end, an opposed second end, and a coin passageway extending therethrough for receiving coin elements, the opposed second end of the coin tube having mounted to the base plate such that the coin passageway of the coin tube is offset with respect to the opening in the base plate and a portion of the base plate being disposed for supporting the coin elements within the coin passageway of the coin tube;

a coin ejecting assembly operably disposed in the base plate, the coin ejecting assembly engaging a lowermost coin element in the coin passageway of the coin tube such that upon activation of the coin ejecting assembly the coin ejecting assembly is moved from a first position wherein the coin ejecting assembly operably engages the lowermost coin element supported in the coin passageway to a second position wherein the coin element engaged by the coin ejecting assembly is removed from the coin passageway of the coin tube and aligned with the opening in the base plate such that the coin element exits the base plate via the opening therein, the coin ejecting assembly comprising:

a body member having a first end and an opposed second end portion and being operably disposed in the recessed portion of the base plate, the body member having an



upper side, an opposed lower side and an opening extending therethrough, the opening having a diameter sufficient to allow a coin element to pass therethrough when the body member is in the second position;

at least one coin engaging member positioned on the upper side of the body member for operably engaging the lowermost coin element; and

means connected to the body member for moving the body member from the first position to the second position and for moving the body member from the second position to the first position, the coin engaging member engaging the lowermost coin element and moving the lowermost coin element from the coin tube to a position for allowing the coin element to be discharged through the opening in the base plate when the body member moves from the first to the second position; and

a first biasing means operably connected to the body member for biasing the body member in an upward direction in the recessed portion of the base plate generally toward the coin elements in the coin tube to insure engaging contact between coin engaging member and the coin element when the body member is moved from the first to the second position, the coin elements in the coin tube biasing the body member in a downward direction in the recessed portion of the base plate when the body member is moved from the second to the first position to effectively reduce

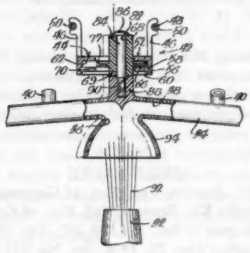
the weight of the coin elements on the body member thereby reducing the force required to move the body member from the first to the second position.

4,266,565

DISHWASHER SPRAY ARM MOUNTING

Vincent P. Gurubatham, St. Joseph, Mich., assignor to Whirpool Corporation, Benton Harbor, Mich.

Filed Oct. 12, 1979, Ser. No. 84,636
Int. Cl.³ B08B *3/02*
U.S. Cl. 134—144 **13 Claims**



6. An improved spray arm and mounting for a dishwasher having a washing chamber, nozzle means located in the lower portion of said chamber for directing a jet of fluid toward said spray arm, and distributing means within said arm for distributing fluid directed to said arm, the improvement resulting in a spray arm which will continuously align itself with respect to said fluid jet, said improvement comprising:

a stationary spray arm mount attached to an upper portion of said chamber;

a bearing slidably juxtaposed to said mount;

retaining means associated with said mount for loosely retaining said bearing in said juxtaposed relationship to said mount; and

a spray arm attached to said bearing including a receiving means for receiving said fluid jet for passage to said distributing means through a central opening in an upper portion of said receiving means, said receiving means transforming energy contained in said fluid jet into a correcting alignment force to slide said bearing relative to said mount whenever said jet does not coincide with said central opening in said receiving means.

4,266,566

SPRING ASSEMBLY FOR FLOATING SEAT RING

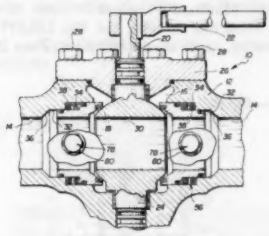
Gary W. Kacal, Rosenberg, and Charles C. Partridge, Houston, both of Tex., assignors to ACF Industries, Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 960,499, Nov. 13, 1978. This application Jul. 26, 1979, Ser. No. 60,951
Int. Cl.³ F16K *43/00*
U.S. Cl. 137—316 **6 Claims**

4. A top entry ball valve including a valve body having inlet and outlet flow passages communicating with a valve chamber, a ball mounted in said valve chamber for rotation between open and closed positions relative to the flow passages, an upper cover plate removably secured to the valve body and permitting removal of the ball from the valve body when the cover plate is removed, an annular shoulder at the juncture of each flow passage with the valve chamber;

a seat ring mounted about each flow passage and having an annular rear face in opposed spaced relation to the associated shoulder to provide a spring pocket therebetween;

an annular spring assembly in the spring pocket between said rear face and said shoulder adapted to urge the seat ring toward the ball, said spring assembly including at least a pair of undulated annular wave springs about the seat ring each wave spring having a plurality of rear and front nodes, the rear nodes on the rearmost wave spring being in contact with said shoulder and the front nodes on the foremost wave spring being in contact with said rear face, said pair of contiguous wave springs being staggered with the front nodes of one wave spring of said pair in opposed



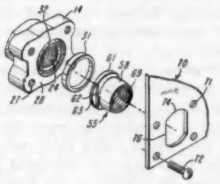
contact relation to the rear nodes of the other wave spring of said pair, means to maintain each pair of wave springs in such staggered position, means to urge the seat ring to a retracted position in which the wave springs are compressed, and means to hold the seat ring in the retracted position.

4,266,567

FLUID CONTROL VALVE AND SUPPORT ASSEMBLY

James F. Pease, 5805 Folkestone Dr., Dayton, Ohio 45459

Continuation-in-part of Ser. No. 818,433, Jul. 25, 1977, Pat. No. 4,149,554. This application Apr. 2, 1979, Ser. No. 25,869
Int. Cl.³ F16K *51/00*
U.S. Cl. 137—343 **9 Claims**



1. In a valve and support assembly including a valve body of molded plastics material, said valve body having an inlet portion defining an inlet and an outlet portion defining an outlet, means supported by said valve body for controlling the flow of fluid from said inlet to said outlet, said inlet portion including a plurality of parallel spaced holes disposed generally around said inlet, a metal fitting including a threaded tubular portion extending from an outwardly projecting integral flange disposed adjacent said inlet portion of said valve body, a circular resilient ring forming a fluid-tight seal between said flange and said inlet portion, a sheet metal support bracket having an aperture aligned with said tubular portion of said fitting and a plurality of holes aligned with said holes within said inlet portion of said valve body, and a plurality of threaded fasteners extending within said holes for securing said bracket to said valve body with said flange disposed therebetween, the improvement wherein said fitting comprises a drawn sheet metal fitting, said aperture within said bracket including a part-cylindrical surface portion having a diameter greater than the inner diameter of said resilient ring, said flange having an outermost cylindrical surface portion with a diameter substantially the same as the diameter of said part-cylindrical surface portion of said bracket, said flange having an overall thickness substantially the same as the thickness of said bracket, mating surface means on said flange and including said flange outermost cylin-

drical surface portion, said mating surface means cooperating with said aperature to prevent rotation of said fitting, and said flange outermost cylindrical surface portion cooperating with said part-cylindrical surface portion of said aperature.

4,266,568

VACUUM BREAKER-PRESSURE RELEASE DEVICE

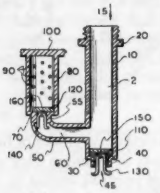
John R. Kuykendall, 122 C.C. Santos St., B.F. Homes, Paranaque, Metro Manila, Philippines

Filed Feb. 7, 1980, Ser. No. 120,077

Claims priority, application Philippines, June 26, 1979, UM-5720

Int. Cl.³ F16K *17/194*

U.S. Cl. 137—493.8 **6 Claims**



1. A valve for use with an air vent pipe of a storage tank which contains fluids in the liquid phase and in the low pressure vapor phase, the valve opening the pipe when the tank is being filled and emptied while keeping the pipe closed otherwise to permit the liquid fluid in the tank to be drawn off and replenished and prevent the vaporous fluid from escaping, comprising a housing with an interior and an exterior, the housing being securable to the pipe in a manner that the pipe communicates with the interior of the housing; an intake check valve arranged in the housing and operatively communicating with the interior and the exterior thereof, the intake check valve operating in a manner that air is permitted to enter the interior of the housing through the intake check valve while being prevented from leaving the interior of the housing through the intake check valve; and an exhaust check valve arranged in the housing and operatively communicating with the interior and the exterior thereof, the exhaust check valve operating in a manner that gas which exceeds a predetermined threshold pressure is permitted to leave the interior of the housing through the exhaust check valve, while gas of a pressure less than the predetermined threshold pressure is prevented from leaving the interior of the housing through the exhaust check valve and air is prevented from entering the interior of the housing through the exhaust check valve, said housing being a J-shaped one piece member having a first tubular portion bounding a first bore having an axis, a second tubular portion bounding a second bore having an axis which is parallel to the axis of said first bore, and a connecting tubular member bounding a third bore which extends between and communicates said first and second bores with one another, said first tubular member forming in said first bore a connecting opening which communicates with an air vent pipe of a storage tank and an air inlet opening through which air can enter said housing and which is coaxial with said connecting opening, said second tubular member forming in said second bore a gas outlet opening through which gas exceeding threshold pressure can leave said housing and which is formed by a plurality of perforations in a wall of said second tubular member.

4,266,569

CHECK VALVE

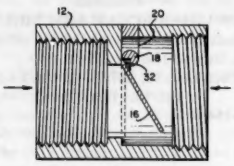
Harold L. Wilson, Antonia, Mo. 63052

Filed Apr. 25, 1979, Ser. No. 33,049

Int. Cl.³ F16K *15/03*

U.S. Cl. 137—527.8 **7 Claims**

1. A tubular check valve comprising a tubular housing, a pivotable valve member, a shaft supporting said valve member for pivotable movement from an open position to a closed position against a valve seat formed of an inwardly extending circular wall member on said housing, said shaft being supported at opposite ends upon openings formed in the wall of



said valve housing, the valve member being hingedly connected to said support shaft, said support shaft being seated in a chord-like opening across said housing and a cover member seated on top of said support shaft to close said opening.

4,266,570

ANGLE VALVE

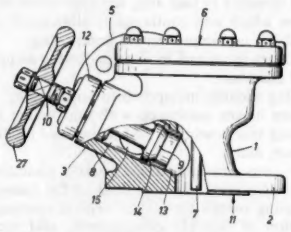
Manfred Sieglitz, Bremen, Fed. Rep. of Germany, assignor to Gustav F. Gerdts KG, Bremen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 935,287, Aug. 21, 1978. This application Dec. 21, 1978, Ser. No. 971,983

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 2738294; Sep. 21, 1977, 2742414

Int. Cl.³ F16K *31/145;* **B65D** *47/20*

U.S. Cl. 137—613 **10 Claims**



1. An angle valve mountable on the exterior of a container having a container valve disposed therein, comprising:

a unitary housing including a container-side connecting member having a front face and a channel formed therein opening onto said front face for communication with said container and a loading-side connecting member, which has a channel formed therethrough and which is capable of communication with a loading line, said valve housing further including an intermediate connecting member mounted on said container-side connecting member and extending radially therefrom, said intermediate connecting member having a free end on which is mounted a support for supporting a valve spindle and a receiving chamber formed therein which establishes communication between said channels of said loading-side and said container-side connecting members, with said channel of said loading-side connecting member disposed to terminate and discharge directly into said receiving chamber and with said loading-side connecting member disposed tangentially relative to said container-side connecting member and extending radially outwardly from said intermediate connecting member between said support and said container-side connecting member, said loading-side connecting member having an axis which is disposed at a fixed angle to said front face and also having an inner end coupled to said intermediate member and an outer end ascending away from said front face;

a valve seat mounted within said receiving chamber;

a stroke-adjustable valve head mounted within said receiving chamber and disposed for cooperative engagement with said valve seat, said valve head being disposed laterally adjacent to said container-side connecting member so as to leave said channel of said container-side connecting member unobstructed for the receipt therein of an actuating plunger;

an actuating plunger which is disposed in and extends through said channel of said container-side connecting member for coupling with the container valve disposed in the container;

a pneumatically operable actuating member supported on said housing and coupled to said actuating plunger; and

a manually-adjustable valve spindle at least partially mounted in said receiving chamber and having an inner end coupled to said valve head and an outer free end supported by said support, said valve spindle being mounted with its axis substantially parallel to the axis of said intermediate member and at an angle to said front face of said container-side connecting member such that its outer free end does not extend substantially above said actuating member and said loading-side connecting member, said spindle being adjustable to control communication between said container-side connecting channel and said receiving chamber.

4,266,571

FUEL METERING VALVE

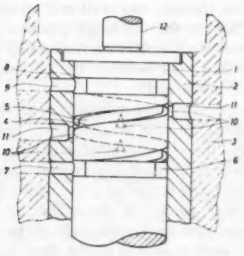
Armin Baüder, Neckarsulm, Fed. Rep. of Germany, assignor to Audi NSU Auto Union Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 23, 1979, Ser. No. 14,544

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1978, 2810177

Int. Cl.³ F16K *21/02*

U.S. Cl. 137—625.48 **5 Claims**



1. A fuel metering valve for fuel injection apparatus for a mixture compressing, spark-ignition internal combustion engine with continuous fuel injection comprising an induction manifold and a plurality of fuel injection nozzles, the valve having a control cylinder with ports equal in number to the number of nozzles and in communication therewith, a control piston arranged to be rotatable in said control cylinder and having a control edge cooperating with said ports for metering an amount of fuel in accordance with the amount of air flowing through said induction manifold, said piston having a continuous spiral groove in uncontrolled connection with a feed passage, one flank of said groove acting as a control edge common to all ports and forming a variable throttle cross-section together with said ports, said ports having a generally triangular cross-section and being staggered along the length of said cylinder relative to each other in conformity with the pitch of said spiral groove in the piston.

4,266,572

ELECTROHYDRAULIC DIRECTIONAL CONTROL VALVE SYSTEM

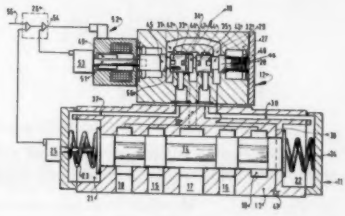
Eckard Schuttenberg, Stuttgart; Manfred Hauser; Winfried Hommen, both of Schwieberdingen, and Klaus Sopha, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 7, 1979, Ser. No. 73,544

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1978, 2840831

Int. Cl.³ F15B *13/043*

U.S. Cl. 137—625.63 **5 Claims**



1. An electrohydraulic directional control valve system comprising, a preliminary directional control valve and a main directional control valve, said main control valve having a first housing provided with an intake port, a return port and at least two load ports; a first control spool movable in said first housing from a central neutral position into a respective one of two lateral working positions; a pressure chamber arranged at each end of said first spool; first spring means arranged in each pressure chamber to urge said first spool into said neutral position; control channels connecting, respectively, said pressure chambers to said preliminary control valve, said preliminary control valve having a second housing provided with control chambers; a second control spool movable in said second housing from a central neutral position into one of two lateral working positions in which pressure fluid is admitted through one of said control chambers into one of said pressure chambers and the other pressure chamber is released through said return port; second spring means arranged at one end of said second spool for urging the same into an additional position in which said control chambers and thus said pressure chambers are interconnected; and a proportionally operating solenoid acting on the other end of said second spool to counteract said second spring means.

4,266,573

ANESTHESIA MACHINE HAVING PROPORTION LIMITING CONTROL SYSTEM

Robert E. Braatz, Sun Prairie, Wis., assignor to Airco, Inc., Montvale, N.J.

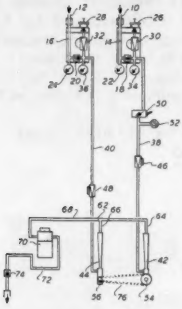
Filed Oct. 19, 1979, Ser. No. 86,961

Int. Cl.³ A61M *17/00*

U.S. Cl. 137—630.18 **7 Claims**

1. An anesthesia machine for providing a mixture of oxygen and a second gas of selected proportions, said anesthesia machine having first and second rotatable valves, said first rotatable valve controlling the flow of oxygen and said second rotatable valve controlling the flow of the second gas, each of said rotatable valves being independently rotatable with respect to said other rotatable valve within a predetermined limit to vary the mixture of oxygen and the second gas, the improvement comprising interconnection means comprising a positive connection between said first and second rotatable valves such that rotation of said second rotatable valve toward its open

direction is limited to a predetermined flow whereupon further opening also causes said first rotatable valve to open to prevent



the percentage of oxygen by volume in the mixture provided by said machine to be below a predetermined percentage.

4,266,574

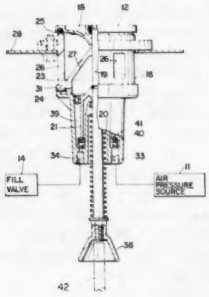
VENT VALVE

Basil B. Tilling, Mission Viejo, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Apr. 19, 1979, Ser. No. 31,666

Int. Cl.³ F16K *31/12*

U.S. Cl. 137—630.19 **9 Claims**



1. A valve assembly comprising a housing having first and second separable housing portions, an annular valve seat disposed on said first housing portion, a valve member movable toward and away from said valve seat, a stem carrying said valve member, spring means carried by said stem, said spring means acting between said second housing portion and said stem and resiliently biasing said second housing portion toward said first housing portion and resiliently biasing said valve member against said valve seat, a piston disposed on said stem, said piston including an end wall and a generally cylindrical wall extending axially from said end wall and terminating at a free end, said second housing portion including generally concentric radially inner and radially outer generally cylindrical walls, said cylindrical wall of said piston and said cylindrical walls of said second housing portion cooperatively defining an expansible chamber, said cylindrical wall of said piston being telescopically received between said cylindrical walls of said second housing portion, and a substantial portion of the axial extent of said spring means being disposed within said inner cylindrical wall of said second housing portion.

4,266,575

DIRECTIONAL VALVE

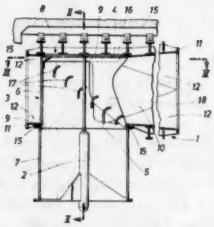
Norbert Lukesch, Linz, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Apr. 23, 1979, Ser. No. 32,534

Claims priority, application Austria, Jun. 5, 1978, 4051/78

Int. Cl.³ F16K *11/02*; F17D *3/00*

U.S. Cl. 137—872 **6 Claims**



1. A directional valve for selectively directing the flow of a liquid from only through a pressure pipeline and from a discharge pipeline into the pressure pipeline extending substantially perpendicularly thereto, which comprises

(a) a valve housing connecting the pressure pipeline to the discharge pipeline, the housing including

(1) a tubular body mounted in the pressure pipeline and having a central portion comprised of two end walls and two side walls interconnecting the end walls, the central portion being of substantially rectangular cross section and the end walls extending in the general direction of the pressure pipeline, and

(2) a cylindrical body extending substantially perpendicularly to one of the end walls and having one end connected to the one end wall and an opposite end for connection to the discharge pipeline, the cylindrical body having a diameter corresponding to the length of the one end wall between the two side walls of the central portion, and

(b) a motor-operable valve member axially slidably mounted for movement between the cylindrical body and the central portion, the valve member including

(1) a partially cylindrical shell coaxial with the cylindrical body and being delimited substantially by a plane passing through the axis of the cylindrical body and shell perpendicularly to the side walls of the central portion,

(2) an end wall at an end of the shell facing the central portion and substantially parallel to the end wall of the central portion opposite the one end wall thereof,

(3) a ring having a diameter corresponding to that of the cylindrical body at the other end of the shell, and

(4) the length of the shell between the end wall thereof and the ring being substantially equal to the distance between the end walls of the central portion and the shell contacting the side walls in said plane when the valve member is moved into the central portion, the valve member providing for communication between the pressure pipeline and the discharge pipeline in an axial position wherein the ring is substantially flush with the one end wall of the central portion, interrupting the communication between the pressure and discharge pipelines in an axial position wherein the end wall of the shell is substantially flush with the one end wall of the central portion and allowing communication only through the pressure pipeline.

4,266,576

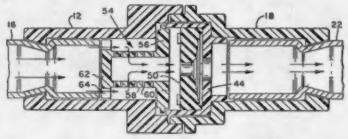
FLOW CONTROL DEVICE IN A PROTECTIVE HOUSING

Jay H. Bradford, South Elgin, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 855,848, Nov. 30, 1977, abandoned. This application Dec. 13, 1978, Ser. No. 969,649

Int. Cl.³ F15D *1/02*

U.S. Cl. 138—40 **3 Claims**



1. A flow control device adapted for connection between an inlet and outlet fluid conduit comprising:

(a) an inlet housing section defining a first fluid passage therethrough, said first fluid passage sized to receive said inlet fluid conduit therein;

(b) an outlet housing section defining a second fluid passage therethrough, said second fluid passage sized to receive said outlet fluid conduit therein, said outlet and said inlet housing sections cooperating to define a fluid chamber intermediate the ends thereof;

(c) an annular retainer member received in said cavity and having a centrally located first orifice therein, said first orifice having an internal diameter less than the internal diameter of said inlet fluid conduit to prevent said inlet fluid conduit from passing therethrough;

(d) a cup-shaped member received in said cavity and disposed adjacent and coaxially aligned with said retainer member, said cup-shaped member having an open end portion and a closed end portion, said closed end portion having a centrally located fluid flow orifice therethrough, said cup-shaped member including a tubular portion extending axially from said closed end portion, said tubular section having an outer wall surface portion in registration with an adjacent internal surface portion of said cavity for limiting movement with respect thereto, said tubular section having a transverse internal dimension less than the external diameter of said outlet fluid conduit for preventing said outlet conduit from passing therethrough, said retainer member and said cup-shaped member further defining a fluid cavity; and

(e) a resilient flow control member disposed in said fluid chamber, said flow control member having an annular configuration with an orifice therethrough, said control member flexing under pressure variations to maintain a constant flow under a wide range of fluid pressures, said retainer member and said cup-shaped member isolating and protecting said control member from impingement by said inlet and outlet fluid conduit as inserted into said inlet and outlet housing sections, said tubular section further preventing said outlet fluid conduit from interferring with the flow of fluid through said fluid flow orifice in said cup-shaped member.

4,266,577

COLLARED FUEL INJECTION PIPE FOR ENGINES

Masayoshi Usui, Numazu, Japan, assignor to Usui Kokusai Sangyo Kabushiki Kaisha, Shizuoka, Japan

Filed Jul. 25, 1979, Ser. No. 60,730

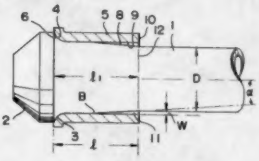
Int. Cl.³ F16L *9/00*

U.S. Cl. 138—109 **2 Claims**

1. A collared pipe for channeling fluid, injected under pressure, which resists breakage due to vibration comprising:

a longitudinally extending injection tube, with one end thereof including a head portion, and with the juncture between said head portion and the remainder of the tube defining a neck, with the outside surface of said tube being tapered in diameter from said neck to a point intermediate the length of said tube; and

a collar of generally tubular configuration disposed about said injection tube extending from said neck towards the opposed end of said tube, said collar being press fit to said tube adjacent said neck and having a constant inner diameter, with the tapered outer surface of said injection tube



diverging from the inner surface of said collar to define a gap, whereby a circumferential contact boundary, corresponding to the outer surface of said tube where said gap is initially defined, functions as a fulcrum of vibration, and wherein said circumferential contact boundary shifts as a function of the vibration such that repeated localized stresses are minimized thereby inhibiting breakage of said tube.

4,266,578

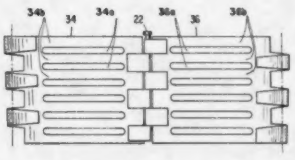
DRILL PIPE PROTECTOR

Jack W. Swain, Bedford; Clarence T. Thomerson, and Tom C. Waldrop, both of Corsicana, all of Tex., assignors to Regal Tool & Rubber Co., Inc., Corsicana, Tex.

Continuation-in-part of Ser. No. 679,727, Apr. 23, 1976, abandoned, and a continuation-in-part of Ser. No. 354,255, Apr. 25, 1973, abandoned. This application Mar. 23, 1979, Ser. No. 23,169

Int. Cl.³ F16L *57/00;* **E21B** *17/10*

U.S. Cl. 138—110 **9 Claims**



1. A protector for a drill pipe, which protector comprises:

(a) a pair of unitary semi cylindrical tension bearing metallic skeleton members, each skeleton member having an axially directed hinge joint and each skeleton member of said pair having a wedge receiving lock structure at a longitudinal joint diametrically opposite said hinge joint, each skeleton member of said pair having a semi cylindrical inner periphery and an axial length equal to at least about the diameter of the drill pipe to be protected and each skeleton member of said pair having a plurality of uninterrupted elongated circumferentially extending parallel openings forming therebetween an array of a plurality of ribs with circumferentially aligned ends, the ends of said openings are adjacent to said hinge joint and said lock structure and the ends of said openings are aligned parallel to said hinge joint and said lock structure, each of said ribs having an unsupported span between the ends thereof;

(b) a thin uniform continuous resilient inner layer bonded to each of said members and forming smooth continuous semi cylindrical inner walls of resilient material for gripping the exterior of said drill pipe;

(c) a thick resilient outer layer bonded to each of said members and to said inner layers; and

(d) a wedge of a few degrees taper for releasably applying a force through said wedge lock to apply a high compressional force to said inner layer at zones beneath said ribs whereby said protector is contracted around and grips said drill pipe to resist displacement of said protector on said drill pipe.

4,266,579

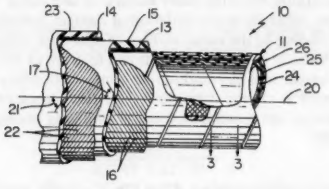
HOSE AND METHOD OF MAKING SAME

Richard Deiss, Graham, Tex., assignor to Dayco Corporation, Dayton, Ohio

Filed Aug. 6, 1979, Ser. No. 64,231

Int. Cl.³ F16L *11/08*

U.S. Cl. 138—127 **14 Claims**



1. In a flexible wire-reinforced polymeric hose comprising a tubular core and at least two concentric wire plies comprising a first and a second wire ply having a polymeric layer disposed therebetween; each ply consisting of a plurality of individual wires wound in parallel side-by-side helical convolutions; one of said wire plies being wound on said core at a particular angle relative to a longitudinal axis through said hose and the next adjacent wire ply being wound at an opposite angle of a magnitude equal to said particular angle; the improvement in said core comprising a first polymeric tube, a tubular fabric layer disposed against said first tube and defined by a helically wound knitted fabric ribbon, and a second polymeric tube disposed against said tubular fabric layer and defined by a helically wound polymeric tape, said first and second polymeric tubes cooperating with said tubular fabric layer to define said tubular core and hose having improved flexibility yet being capable of withstanding high fluid pressures within said hose, and preventing said wires from cutting through said hose.

4,266,580

LOADING AND UNLOADING SYSTEM FOR TANK CAR TRAINS

Frank O. Dixon, 9 Thurgate Crescent, Thornhill, Ontario, L3T 4G4, Canada

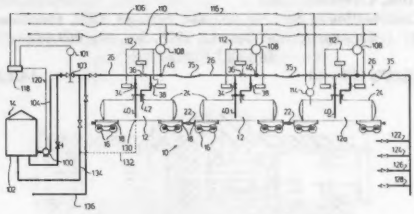
Filed Aug. 7, 1979, Ser. No. 64,614

Claims priority, application United Kingdom, Aug. 10, 1978, 32860/78

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—35 **10 Claims**

1. A tank car for transporting a liquid comprising: a wheeled vehicle supporting a liquid storage tank, a first pipe extending vertically within the tank with an open end terminating in proximity to the bottom of the tank, a second pipe extending vertically into the tank with an open end terminating near the top of the tank, a liquid conduit in proximity to the top of the tank in communication with the said first and second pipes, and valve means for closing the first and second pipes and opening the conduit for isolating the tank from the conduit and for opening the first and second pipes and closing the conduit



between the first and second pipes for loading liquid into or unloading liquid from the tank.

4,266,581

VACUUM TREATMENT UNIT

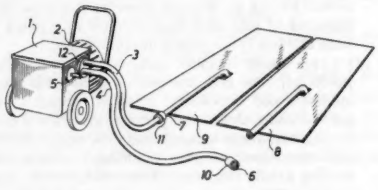
Harald S. Wenander, Nacka, Sweden, assignor to Tremix AB, Skarholmen, Sweden

Filed Sep. 19, 1979, Ser. No. 77,069

Claims priority, application Sweden, Sep. 25, 1978, 7810040

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—65 **6 Claims**



1. A vacuum treatment unit for removing excess water from newly poured concrete, comprising; a vacuum pump connectable to at least two suction mats or the like via separate suction pipes, said suction pipes being readily disconnectably connected to the suction mats, said pies being connected to the vacuum pump via a selectively settable valve means, said valve means being constructed such that at least one pipe is always in communication with the suction side of the pump.

4,266,582

TANK FILLING LIMITER

Andre Sergent, Paris, France, assignor to Petit & Cie, France

Filed Sep. 20, 1979, Ser. No. 77,457

Claims priority, application France, Sep. 28, 1978, 78 27802

Int. Cl.³ B65B *3/26*

U.S. Cl. 141—198 **5 Claims**

1. A limiter for the filling of a tank with liquid, mounted in said tank, comprising:

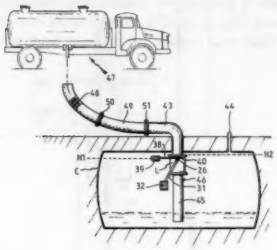
a hydraulic valve provided with a monitoring obturator means having a control flap and a control axle connected to a first pivoting arm having a first float included in an arm-control assembly;

a second pivoting arm having a second float and a peg cooperating with a cam disposed at the end of said first arm opposite said first float;

a fixed member on said control axle comprising a stop and pawl arrangement with a perpendicular flat spring urging a finger disposed on said pawl and pivoting onto said second arm, said finger being in escaping relationship with respect to said flat spring;

said hydraulic valve comprising a body provided with an inlet flange and an outlet flange, a cylinder and a movable

piston provided with an inner cavity and bearing on a seating disposed at the vicinity of said outlet flange;



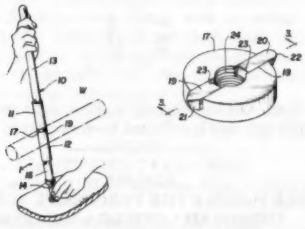
and means for placing said inner cavity and the downstream side of said obturator means in communication with said tank.

4,266,583

SPINDLE TURNING TOOL

Chester E. Kirk, 3537 NW. Mink Pl., Corvallis, Oreg. 97330, and Owen E. Raab, 11825 Glendale Way South, Seattle, Wash. 98168

Filed Nov. 15, 1979, Ser. No. 94,544
Int. Cl.³ B23B *27/00*
U.S. Cl. 142—56 **3 Claims**



1. For use in a wood lathe cutting tool of the rockable bar type having clamping body members adapted to hold between them a cutting bit unit in a use position, a disc body provided in one end face with a diametrical groove, a pair of radially extending profiled cutting bits fixed in said groove with their profiled cutting tips projecting radially of the periphery of the disc body, and the disc body having a central threaded through opening adapted to receive therethrough an internal securing rod of said lathe cutting tool and also adapted for engagement with a threaded bolt, said bolt forming a temporary handle for the disc body during sharpening of the profiled cutting bits.

4,266,584

EDGER SAW COMBINING CHIPPER WITH CIRCULAR SAW BLADE

Joseph J. Lomnicki, Portland, Oreg., assignor to Mainland Industries, Inc., Lake Oswego, Oreg.

Filed Jun. 27, 1979, Ser. No. 52,599
Int. Cl.³ B27C *9/00*
U.S. Cl. 144—39 **11 Claims**

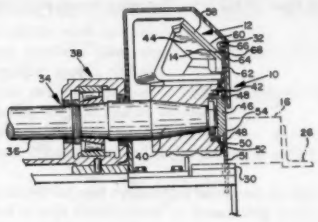
1. Apparatus for forming a flat surface on a workpiece, comprising:

(a) a rotatable mandrel;

(b) a unitary saw plate mounted for rotation with said mandrel, said saw plate having a generally circular periphery, a near side and a workpiece side;

(c) a plurality of saw tooth means arranged about said periphery of said saw plate for cutting away portions of said workpiece to form said flat surface perpendicular to the axis of rotation of said mandrel, said saw tooth means defining a kerf;

(d) means for defining a plurality of apertures extending through said saw plate; and



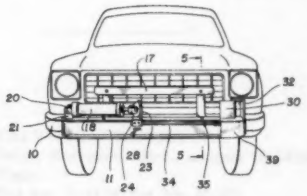
(e) a plurality of chipper knives mounted for rotation with said mandrel, each of said plurality of chipper knives having a cutting edge extending within a respective one of said apertures and terminating short of said workpiece side of said saw plate.

4,266,585

VEHICLE MOUNTED LOG SPLITTER

Ronald W. Denzer, P.O. Box 845, Conrad, Mont. 59425

Filed Nov. 27, 1979, Ser. No. 97,702
Int. Cl.³ B27L *7/00*
U.S. Cl. 144—193 A **8 Claims**



1. A log splitter comprising a base member including mounting bracket means for attaching the base member to a support, a power cylinder attached to the base member and including a ram head plate having guided engagement along the base member, a log splitting wedge fixed on the base member in opposing relationship to the ram head plate, a guard for the log splitting wedge pivotally mounted on the base member for swinging movement toward and away from one side of the wedge, and driving means for the guard connected with the ram head plate.

4,266,586

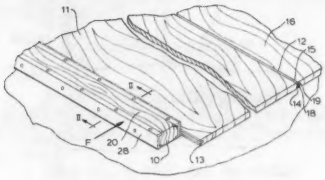
PLYWOOD DRIVING TOOL

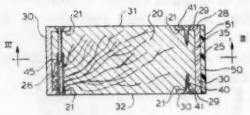
Harold B. Brown, 2951 Village Dr., Marietta, Ga. 30062

Filed Jun. 18, 1979, Ser. No. 49,600
Int. Cl.³ B66F *13/00*
U.S. Cl. 145—1 B **4 Claims**

1. A device for driving tongue and groove wood flooring members into seated position by application of hammer blows comprising a substantially rectangular cross-section wood core having a length which is a large multiple of the width thereof, each longitudinal corner thereof being stepped providing reduced ledges running longitudinally at all corners of the core, two U-shaped cross-section rigid metal channel members each having parallel spaced apart legs interconnected by a bight section, the legs being spaced apart by a distance substantially equal to the distance between spaced bottom surfaces of the stepped corners, the legs having a length substantially equal to the depth of the stepped corners, each of the channel members

being carried by the wood core with the legs of each channel member being received in the stepped corners at one side of the core with the legs substantially filling the stepped corner, an inside face of the bight being in contact with the side face of the core, the legs lying substantially flush with the top and bottom faces of the core, fastening means securing the channel





members to the core, an outside face of the bight of at least one member coated with a resilient antimar coating bonded thereto, the core being compressible under application of normal forces encountered in driving flooring members into seated engagement, the channel members being effective to prevent warpage of the core.

4,266,587

MANUAL TOOL

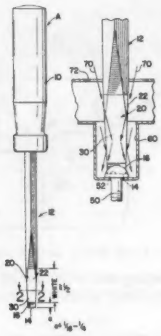
Ray E. Wood, 2303 E. 5th St., Anderson, Ind. 46012

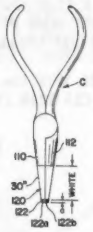
Continuation of Ser. No. 918,781, Jun. 26, 1978, abandoned, which is a continuation of Ser. No. 783,947, Apr. 1, 1977, abandoned. This application Aug. 1, 1979, Ser. No. 62,699

Int. Cl.[3] B25B *15/00*

U.S. Cl. 81—1 R **4 Claims**

1. An improvement in a manual tool having an end, a work engaging tip at said end, a handle spaced from said end and an elongated terminal portion having a peripheral surface extending from said work engaging tip, said improvement comprising: a layer of predominately white, light-reflective material on said peripheral surface and adjacent to, but spaced a selective





distance from, said tip whereby ambient light from a source spaced from said tool is reflected from said layer.

4,266,588

FLEXIBLE HANDLE FOR PERCUSSIVE TOOL WITH IMPROVED VERTEBRA MEMBER

Vincent J. Tudisco, Westwood, N.J., assignor to White Development Corporation, Bennington, Vt.

Filed Jun. 9, 1980, Ser. No. 157,540

Int. Cl.[3] B25G *1/00*

U.S. Cl. 145—61 D **6 Claims**

1. A hand impact tool comprising:

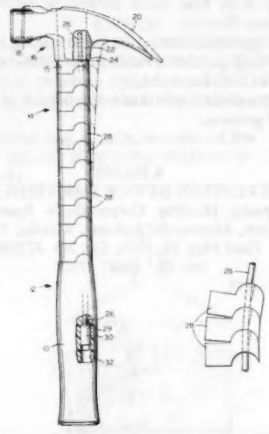
a. an impact-tool head portion having first and second ends;

b. a handle;

c. an elongated shaft having one end fixedly connected to said handle and its other end fixedly connected to said impact-tool head portion intermediate the ends thereof, said shaft being resiliently deflectable from the rectilinear axis of its rest position; and

d. a multiplicity of substantially incompressible vertebra members assembled into a column, said vertebra members each having a passage extending therethrough forming an elongated passage through said column, said shaft extending through said elongated passage, deflection of said shaft requiring relative pivoting of said vertebra members, a multiplicity of consecutive vertebra members of said column being substantially identically configured with abutment surfaces at the top and bottom margins thereof extending generally transversely of said rectilinear axis of said shaft, one abutment surface of each vertebra member of said multiplicity of substantially identically configured consecutive vertebra members providing a concave recess, and the other abutment surface providing a convex boss complementarily configured to slidably seat in said concave recess, said recess and boss cooperating for limited pivoting of said convex boss relative to said recess in

one direction from said rest position of said shaft about a pivotal axis extending perpendicularly to said axis of said elongated passage, said abutment surfaces having cooperating portions substantially preventing pivoting from said rest position in the other direction, said passage being of greater transverse dimension than said shaft along at least



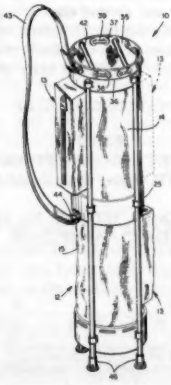
a portion of its axial length so as to permit said limited pivoting of said vertebra member about said pivotal axis in said one direction concurrently with deflection of said shaft, whereby deflection of said shaft when one end of said head portion strikes a workpiece is permitted but deflection of said shaft in the other direction past said rest position is substantially prevented.

4,266,589

LIGHTWEIGHT GOLF BAG

Clifford E. Cochran, 3107 Habersham Hills, Cumming, Ga. 30130

Filed Nov. 19, 1979, Ser. No. 95,354
Int. Cl.³ A63B *55/04*
U.S. Cl. 150—1.5 B **3 Claims**



2. A lightweight carrier for golf clubs or the like, comprising:

a plurality of elongated structural members extending substantially the length of the carrier;

first and second frame members connected to said elongated members adjacent the top ends and the bottom ends thereof, in position to maintain said elongated members in fixed spaced apart relation so as to define a spatial volume between the elongated members;

liner means disposed within said spatial volume and removably retained therein by securement to at least one of said frame members, thereby to define a receptacle for storing elongated articles such as golf clubs;

said elongated members being disposed to define a substantially cylindrical spatial volume;

said first frame member comprising cylindrical band defining an opening for said spatial volume;

said liner means comprising a flexible liner which fits through said cylindrical band to be received within said volume;

cooperating means on said cylindrical band and on the contiguous end of said flexible liner to detachably secure the flexible liner within the volume, said cooperative means comprising:

a plurality of openings formed in said cylindrical band;

two sets of plural openings formed in said flexible liner;

each set corresponding in alignment with said openings in said cylindrical band and one such set being spaced a distance above the other set so that the open upper end of said flexible liner is folded over and along the outside of said cylindrical band with the two sets of openings coaxially aligned with each other and with said plurality of openings in said cylindrical band; and

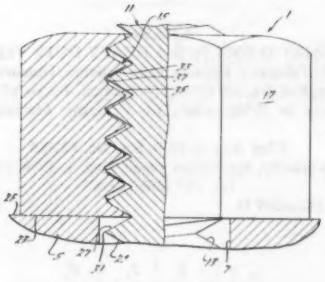
means disposed in said aligned openings to maintain said upper end of said flexible liner on said cylindrical band.

4,266,590

PREVAILING TORQUE NUT

Arthur J. McKewan, Rochester, Mich., assignor to Microdot Inc., Darien, Conn.

Filed Apr. 9, 1979, Ser. No. 28,328
Int. Cl.³ F16B *39/02*
U.S. Cl. 411—307 **6 Claims**



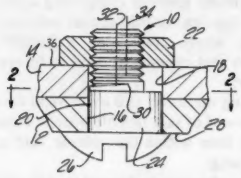
1. A threaded assembly comprising a first part having external helical threads of substantially uniform pitch and substantially V-shape including top and bottom flanks intersecting in thread crests, and a second part having internal helical threads of modified substantially V-shape and substantially uniform pitch sized to receive the external threads, said internal threads having top and bottom flanks and being of the wedge ramp type and having wedge ramps located at the roots of the threads extending between adjacent top and bottom flanks, the pitch of said internal threads being slightly less than the pitch of the external threads.

4,266,591

LOCKING CONNECTOR

Erwin F'Geppert, Novi, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 18, 1979, Ser. No. 50,001
Int. Cl.[3] F16B *39/28*
U.S. Cl. 411—167 1 Claim



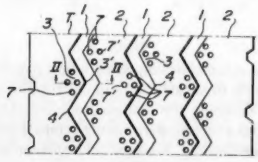
1. In combination, a locking connector joining two members together, said members having aligned circular openings of the same diameter therethrough; said connector including a large diameter circular shaft having the same dimension as the aforementioned circular openings, said circular shaft having an axis **34** coincident with the axis of the circular openings, said shaft extending entirely through one of the members to be joined, and partially through the other member so as to align said two members together; a head extending from one end of the shaft, said head having an axis **32**, offset and parallel to axis **34**, said head being of sufficient size to overlap the adjacent member's surface area surrounding the adjacent circular opening; a relatively small diameter threaded stem extending from the other end of the shaft, said stem being oriented on an axis **32**, which is offset and parallel to the aforementioned shaft axis **34**; and a nut **22** threaded on the stem, said nut overlapping the adjacent member's surface area surrounding the associated circular opening, the offsetting of axis **32** of the threaded stem from axis **34** of the large diameter circular shaft providing an unoccupied space **18** within said other member, the resulting uneven distribution of reaction forces causing a slight tilt of the nut thread surfaces relative to the thread surfaces of the stem thereby eliminating thread parallelism of said nut and said threaded stem, said nut and head cooperatively clamping the two members therebetween.

4,266,592

PNEUMATIC TIRE FOR A HEAVY DUTY VEHICLE

Hiroyoshi Takigawa, Kodaira; Iwao Arimura, Hamura; Makoto Tanaka, Kodaira, and Shinichiro Ohkuni, Tokyo, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Aug. 3, 1979, Ser. No. 63,883
Claims priority, application Japan, Aug. 4, 1978, 53-94490
Int. Cl.[3] B60C *11/00*
U.S. Cl. 152—209 D 18 Claims



1. In a pneumatic tire for a heavy duty vehicle including a tread surface divided along circumferential directions by at least two zigzag tread grooves having sides extending into said tread surface to form a plurality of circumferential zigzag ribs having corners and a central zone, the improvement comprising:

stress releasing apertures

(a) formed at least in zones of said circumferential ribs which are within distances approximately 30% of widths of the circumferential ribs from the sides thereof;

(b) said apertures formed in extending corners of the ribs being more than those formed in retracting corners adjacent thereto;

(c) said apertures formed in the extending corners of the ribs being greater in number than those in said central zone of the ribs; and

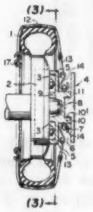
(d) depths of said apertures being 0.3–1.0 of depths of the tread grooves.

4,266,593

SLIP-PREVENTION DEVICE FOR VEHICLE TIRES

Michio Hayashi, Housing Corporation's Apartment House 50-718, 6-ban, Akabanedai 1-chome, Kita-ku, Tokyo, Japan

Filed May 10, 1979, Ser. No. 37,835
Int. Cl.[3] B60C *27/00*
U.S. Cl. 152—218 8 Claims



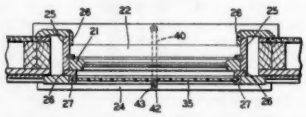
1. A slip prevention device comprising a support body provided with a plurality of bolt holes, said support body being adapted to be attached to the wheel of a vehicle, said support body defining an annular groove, elastic ring means disposed in said annular groove and a slip prevention mat for covering the surface of a vehicle tire, said slip prevention mat comprising a net-like structure having a rhombic lattice, said net-like structure being made of a rope provided with a cover layer, first connecting means connected to one side of said net-like structure for securing the net-like structure together at a position on the inside of the tire and second connecting means connected to the other side of said net-like structure, said second connecting means being connected to the elastic ring groove disposed in the annular ring of the support body at a position on the outside of the tire.

4,266,594

SAFETY STORM WINDOW

Robert D. Gunn, 1471 Akins Rd., Broadview Heights, Ohio 44141

Filed Oct. 9, 1979, Ser. No. 82,968
Int. Cl.[3] A47H *23/00*
U.S. Cl. 160—354 10 Claims



1. A removable storm pane for use in a rectangular window opening closed by a sash, the storm pane consisting of panels of impervious stiff sheet material disposed with edges adjoining, and with the panels hinging between two positions, one posi-

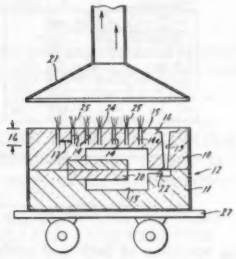
tion having the plane of one panel at a small angle to the plane of another panel with an overall dimension transverse to both panels small enough to permit insertion in and removal from a window opening, and the other position having the panels in a single plane with their overall dimensions being those required to provide a second closure in the window opening.

4,266,595

USE OF MOLD VENTING PRACTICES IN GREEN SAND MOLDING FOR ODOR REDUCTION

Conrad G. Perkey, Dearborn Heights, and John L. Bell, Detroiz, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 6, 1979, Ser. No. 64,204
Int. Cl.³ B22C 9/02; B22D 45/00
U.S. Cl. 164—41 **7 Claims**



1. A method of reducing odors resulting from a molding operation, comprising:

(a) preparing a sand mixture containing 1–2% by weight of volatile combustable organic material,

(b) compacting the sand mixture to define a mold and mold cavity, shaping the compacted sand to define a series of vent channels in said mold leading from the mold exterior to the mold interior but spaced a distance of 1–2 inches from the mold cavity, each of said vent channels being spaced from one another a distance no greater than 10 inches, and said mold cavity having a pouring basin and sprue associated therewith leading from the upper surface of said mold to said mold cavity, at least one of said vent channels being located a distance from said pouring basin no greater than 2.5 inches, and

(c) introducing molten ferrous metal to said pouring basin effective to fill said mold cavity, said molten metal heating volatile ingredients in said sand mixture to generate gases, said gases exiting through said vent channels and being auto-ignited by the temperature of the molten metal in said pouring basin, said ignited gases being consumed and combusted so as to reduce the odorous character of the exhaust gases by at least 50%.

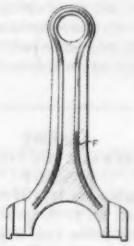
4,266,596

METHOD OF PRODUCING A UNIDIRECTIONAL FIBER-REINFORCED COMPOSITE MATERIAL

Keisuke Ban, Fujimi, and Takeo Arai, Higashimatsuyama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 14, 1978, Ser. No. 961,385
Claims priority, application Japan, Nov. 29, 1977, 52/143029
Int. Cl.³ B22D 18/02, 19/14
U.S. Cl. 164—97 **7 Claims**

1. A method of producing a unidirectional fiber-reinforced composite material including the steps of: covering bundles of an inorganic fiber having unidirectionally high elasticity and high strength, with a covering material which is capable of being molten and diffused into a matrix metal, to thereby form a fiber body having a defined shape, volume and fiber density; placing the resulting fiber body within a mold; pouring a molten matrix metal into said mold; and squeeze casting said molten matrix metal along with the fiber body to form the unidirectionally fiber-reinforced composite material while causing said covering material to melt and diffuse under heat of said molten matrix metal into the latter.

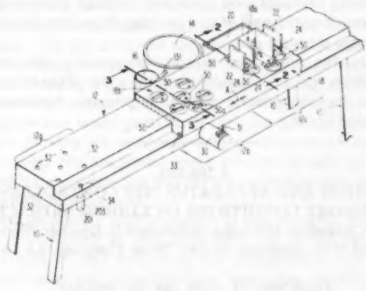


4,266,597

CAST-ON METHOD AND APPARATUS FOR CASTING PARTS ONTO THE LUGS OF LEAD-ACID BATTERY PLATES STACKS

William J. Eberle, Reading, Pa., assignor to General Battery Corporation, Reading, Pa.

Continuation of Ser. No. 910,944, May 30, 1978, Pat. No. 4,180,120, which is a continuation-in-part of Ser. No. 880,017, Feb. 21, 1978, and a continuation-in-part of Ser. No. 752,644, Dec. 20, 1976, said Ser. No. 880,017, is a division of Ser. No. 659,572, Feb. 19, 1976, Pat. No. 4,085,792, which is a continuation-in-part of Ser. No. 618,772, Oct. 2, 1975, Pat. No. 3,980,126, which is a continuation-in-part of Ser. No. 432,545, Jan. 11, 1974, Pat. No. 3,954,216, which is a continuation-in-part of Ser. No. 395,528, Sep. 10, 1973, Pat. No. 3,861,575, which is a division of Ser. No. 184,338, Sep. 28, 1971, abandoned. This application Jun. 11, 1979, Ser. No. 47,001
The portion of the term of this patent subsequent to Dec. 25, 1995, has been disclaimed.
Int. Cl.³ B22D 19/00, 25/04
U.S. Cl. 164—109 **5 Claims**



1. A method of casting lead parts onto the protruding positive and negative lug rows of a lead-acid battery stack comprising the steps of:

(a) providing a base surface having at least one molten lead supply orifice disposed in said surface;

(b) providing a mold carriage means which can be moved along said base surface;

(c) fitting at least one mold into a well defined on said mold carriage means to define at least a mold cavity on said mold carriage means;

(d) positioning said battery stack so at least a portion of one

of the rows of said stack protrudes into at least a portion of said at least one mold cavity; and

(e) moving said mold carriage means at least between a position wherein said mold cavity is aligned over said at least one orifice to receive molten lead introduced therefrom, and at least one other position wherein portions of said mold carriage means seals said orifice with respect to the atmosphere.

4,266,598

METHOD AND APPARATUS FOR STORING HEAT ENERGY

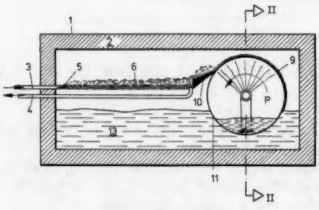
Werner H. Mutti, Rigistrasse 16, CH-5033 Buchs, Switzerland

Filed Jun. 13, 1979, Ser. No. 48,101

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1978, 2826058

Int. Cl.³ F28D *21/00*

U.S. Cl. 165—1 **8 Claims**



1. A method for storing of heat, in which fusion heat is supplied to melt a solidified heat storage medium, and heat is removed as desired by flowing a heat-absorbing carrier liquid in the desired amount through a first heat transfer mechanism which is dipped into the melted storage medium and thereby permitting the storage medium to solidify on the walls of the first heat transfer mechanism, wherein the improvement comprises:

supplying the fusion heat by heat transfer from a primary, heat-emitting carrier liquid to the solidified storage medium;

using as said first heat transfer mechanism a conventional rotating crystallization drum and partially immersing the circumferential wall of said rotating drum into the melted storage medium; and

rotating the drum, and thereby transporting the storage medium which has solidified on the walls of the drum into heat transfer relation with said primary, heat-emitting carrier liquid.

4,266,599

METHOD AND APPARATUS FOR CONTROLLING COMFORT CONDITIONS INCLUDING SETBACK

James F. Saunders, Onalaska, and Robert E. Krocker, Stoddard, both of Wis., assignors to The Trane Company, La Crosse, Wis.

Filed Nov. 17, 1978, Ser. No. 961,815

Int. Cl.³ F25B *13/00, 29/00*

U.S. Cl. 165—2 **26 Claims**

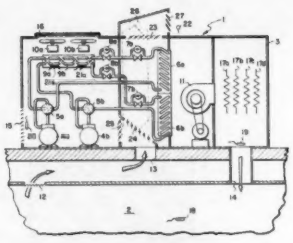
1. A method of operating a system for controlling the comfort condition within a conditioned zone, said system including selectively operable preferred and back-up conditioning means, each having a conditioning capacity associated therewith, for varying the comfort condition within said conditioned zone, said preferred conditioning means exhibiting more favorable energy consumption characteristics than said back-up conditioning means; said method comprising the steps of

a. effecting operation of said preferred conditioning means alone when its capacity is adequate in order to maintain the comfort condition within said conditioned zone at a normal level during operation in a normal mode;

b. effecting operation of both said preferred and back-up conditioning means when the capacity of said preferred conditioning means alone is inadequate in order to maintain the comfort condition within said conditioned zone at said normal level during operation in said normal mode;

c. permitting the comfort condition within said conditioned zone to degrade toward an economy level during a setback period of predetermined duration for operation in an economy mode;

d. effecting operation of said preferred conditioning means alone when its capacity is adequate in order to maintain the comfort condition within said conditioned zone at said economy level during operation in said economy mode;



e. effecting operation of both said preferred and back-up conditioning means when the capacity of said preferred conditioning means is inadequate in order to maintain the comfort condition within said conditioned zone at said economy level during operation in said economy mode; and

f. determining at the start of said setback period and during its term whether the capacity of said preferred conditioning means alone is adequate to restore the comfort condition within said conditioned zone to said normal level and initiating operation of said preferred conditioning means alone at a point in time during said setback period when its capacity is adequate to restore the comfort condition within said conditioned zone to said normal level by the end of said setback period.

4,266,600

HEAT EXCHANGER WITH DOUBLE WALLED TUBES

George Bieberbach, Tampa, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 810,691, Jun. 28, 1977, abandoned. This application May 3, 1979, Ser. No. 35,870

Int. Cl.³ F28P *7/00*

U.S. Cl. 165—76 **3 Claims**

1. A heat exchanger shell comprising:

a first shell portion having an outwardly extending flange on one end thereof;

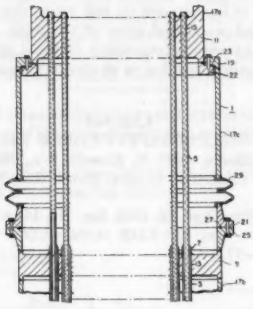
a second shell portion having an outwardly extending flange on one end thereof;

an intermediate shell portion disposed between said first and second shell portion;

said intermediate shell portion having an inwardly extending flange on one end thereof and an outwardly extending flange on the other end thereof;

said intermediate shell portion having an internal surface which is slightly larger than the outer periphery of said flange on said first shell portion; and

said flanges on said intermediate shell portion mating with said flanges on said first and second shell portion and



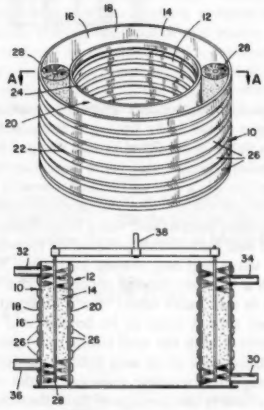
being so disposed with respect thereto so that the intermediate shell portion can slide over the first shell portion.

4,266,601

HEAT EXCHANGER FOR CONTAMINATED WATER

Jack L. Jenkins, Hawthorne, Nev., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 13, 1979, Ser. No. 74,844
Int. Cl.³ F28F *17/00;* F22B *37/48*
U.S. Cl. 165—94 **7 Claims**



1. A heat exchanger comprising:

(a) a large cylindrical tank open at the top to ambient pressure, said tank having a base and a first hollow region concentric about the longitudinal axis of said tank, a first annular structure concentric about said first hollow region, a second hollow region concentric about said first annular structure and a second annular structure concentric about said second hollow region, said second hollow region having an inner wall formed by the outer surface of said first annular structure and an outer wall formed by the inner surface of said second annular structure;

(b) means for introducing a contaminated liquid medium to be cooled into said second hollow region;

(c) means for removing said liquid medium from said second hollow region;

(d) means for injecting a cooling medium under selectively variable pressure into said first and said second annular structures such that a selectively variable cooling rate of said inner and said outer walls of said second hollow region is obtained;

(e) means for extracting said cooling medium from said first and said second annular structures;

(f) means for brushing continuously said inner and said outer walls of said second hollow region; and

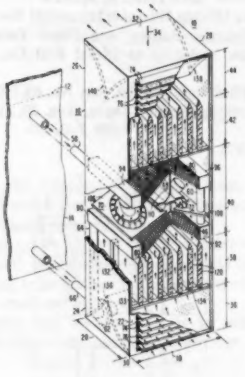
(g) means for filtering said cooled contaminated liquid medium.

4,266,602

HEAT EXCHANGER FOR COOLING ELECTRICAL POWER APPARATUS

Dale White, Muncie; David L. Ayers, West Lafayette, both of Ind., and Allan E. Hribar, Churchill Borough, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 21, 1980, Ser. No. 122,937
Int. Cl.³ F28F *9/22*
U.S. Cl. 165—124 **25 Claims**



1. A fluid-to-air heat exchanger for cooling electrical power apparatus, comprising:

a vertically elongated housing having side wall, top and bottom portions, and air openings near the top and bottom portions,

a fluid-to-air tube core in said housing, said tube core having inlet and outlet means adapted for fluid flow communication with the electrical apparatus to be cooled, said tube core being vertically divided into upper and lower portions having a predetermined spacing therebetween,

air moving means in said housing, in the spacing between the upper and lower portions of the tube core and operative for moving air vertically in a predetermined direction through the lower and upper portions of said tube core, with the air entering and exiting predetermined openings in said housing, and

sound dissipative muffler means in said housing, above the upper portion of said tube core and below the lower portion of said tube core, for dissipating sound energy associated with the air being vertically moved through the housing.

4,266,603

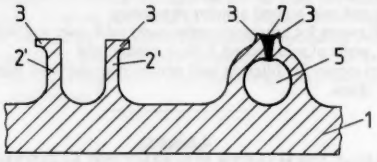
HEAT EXCHANGERS AND METHOD

Willy Germann, Wurenlos, Switzerland, assignor to BBC Brown, Boveri & Co., Ltd., Baden, Switzerland

Filed Jan. 19, 1979, Ser. No. 4,869
Claims priority, application Switzerland, Jan. 25, 1978, 785/78
Int. Cl.³ F28F *1/22*
U.S. Cl. 165—171 **1 Claim**

1. A heat exchanger comprising a base having opposite

surfaces, a pair of walls extending outwardly from one of said base surfaces, said walls being joined by a seam extending



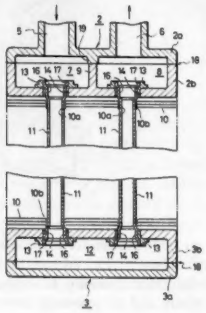
longitudinally of said walls and cooperating with said walls to form an enclosed passage for fluid, said walls including flanges along said seam.

4,266,604

HEAT EXCHANGER WITH FLUID TANKS MADE OF SYNTHETIC RESIN

Seiji Sumikawa; Hiroshi Niizuma; Hiromichi Tonegawa; Tsuneo Torizuka; Yoichiro Furuya, and Norio Takashima, all of Konan, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Aug. 8, 1979, Ser. No. 64,750
Claims priority, application Japan, Aug. 23, 1978, 53-102481
Int. Cl.³ F28F *9/02*
U.S. Cl. 165—176 **9 Claims**



1. A heat exchanger comprising:

two inner tank elements each made of synthetic resin, arranged in opposed and spaced relation, each inner tank element having substantially flat opposite end wall surfaces and formed with a plurality of openings;

a first and a second outer tank element each made of synthetic resin, each outer tank element being united with an associated one of said inner tank elements to define thermal fluid spaces in cooperation therewith, the first outer tank element having an inlet and an outlet for thermal fluid;

partition means dividing the thermal fluid space defined by the first outer tank element and the associated inner tank element into an inlet chamber and an outlet chamber, said partition means comprising two partition walls formed integrally on opposed end walls of said first outer tank element and said associated inner tank element, the partition walls having opposed marginal ends thereof united together in an abutting manner;

gasket means having tubular bodies fitted in the respective openings of said inner tank elements;

a plurality of tubes extending between the inner tank elements, each tube having opposite end portions extending through associated ones of the tubular bodies of the gasket means, said opposite end portions each having at least one portion expanded to urge the respective tubular body against the inner peripheral surface of the corresponding opening in the associated inner tank element so as to have a diameter larger than the remaining portion of the tube to clamp the tubular body between the tube and the inner tank element; and

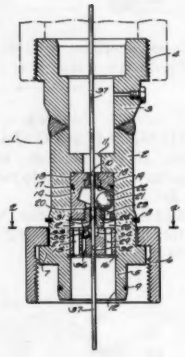
a plurality of fins secured on said tubes, the inner tank elements and associated ones of the outer tank elements thereby having corresponding opposed peripheral edges thereof united together in an abutting manner.

4,266,605

WIRELINE SAFETY CHECK VALVE

Russel G. LaBorde, 4055 N. Stowell Ave., Shorewood, Wis. 53211, and Emmett F. Brieger, Bonito Rte., Nogal, N. Mex. 88341

Filed Apr. 28, 1980, Ser. No. 144,644
Int. Cl.³ E21B *34/04, 43/00*
U.S. Cl. 166—97 **4 Claims**



1. A wire line safety check valve for a well, said check valve comprising a valve body having a stepped axial bore therethrough, a valve insert fitted in said stepped bore in abutment with a shoulder thereof, said valve insert having a stepped axial bore therethrough, a first valve seat secured in the upper end of the bore in said valve insert and having a wire line passage, a ball, an inclined bore in said valve insert from one side thereof fitted with said ball normally biased by its weight to fall away from said valve seat and toward said valve body, a guideline insert with a wireline passage secured in the lower end of the axial bore in said valve insert, and a longitudinal bore in said valve insert that is open at its bottom end for unrestricted communication with the well casing and open at is upper end to the inclined bore at an area behind the ball, a wireline extends through the wireline passages of the check valve and normally restricts the passage of fluid therethrough;

whereby upon loss or removal of said wireline, fluid under pressure in said well surges upward and forces said ball to abut said valve seat and close the opening thereof.

4,266,606

HYDRAULIC CIRCUIT FOR BOREHOLE TELEMETRY APPARATUS

Frederick A. Stone, Durham, Conn., assignor to Teleco Oilfield Services Inc., Middletown, Conn.

Filed Aug. 27, 1979, Ser. No. 70,092
Int. Cl.³ E21B *47/00*
U.S. Cl. 166—113 **7 Claims**

1. A hydraulic circuit for borehole telemetry apparatus, including:

pump means for delivering pressurized hydraulic fluid to a first conduit;

filter means positioned in said first conduit from said pump means to receive hydraulic fluid from said pump means;

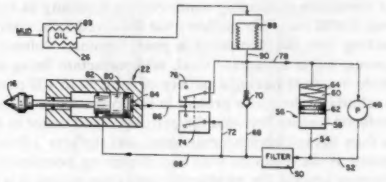
return conduit means for returning hydraulic fluid to the inlet to said pump means;

second conduit means for delivering hydraulic fluid from said filter means to valve actuator means to actuate said valve actuator means in a first direction;

regulating and relief valve means connected to said second conduit means downstream of said filter means and between said second conduit means and said return conduit means;

third conduit means connected to said second conduit means downstream of the connection to said regulating and relief valve means;

solenoid valve means connected to said third conduit means and to said return conduit means;



fourth conduit means between said solenoid valve means and said valve actuator means;

said solenoid valve means in a first position thereof delivering pressurized hydraulic fluid to said valve actuator via said third and fourth conduit means to actuate said valve actuator means in a second direction, and said solenoid valve means in a second position thereof connecting said fourth conduit means to said return conduit means to return hydraulic fluid to the inlet of said pump; and

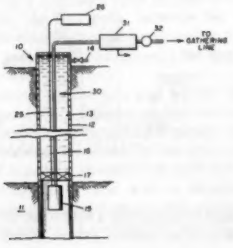
pressure compensation means connected to said return conduit means to vary the pressure of hydraulic fluid in said return conduit means as a function of changes in pressure of an environment to which said pressure compensating means is exposed.

4,266,607

METHOD FOR PROTECTING A CARBON DIOXIDE PRODUCTION WELL FROM CORROSION

Louis N. Halstead, Houston, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 7, 1980, Ser. No. 137,701
Int. Cl.³ E21B *43/00*
U.S. Cl. 166—244 C **6 Claims**



6. In a method for producing carbon dioxide from a carbon dioxide production well having a pump means suspended on a production tubing in said well to boost the pressure of the produced carbon dioxide to a value sufficient to produce carbon dioxide at the surface above its critical pressure, the improvement comprising:

setting a packer means just above said pump means to isolate said pump means from the annulus formed between the wellbore and said production tubing above said packer means; and

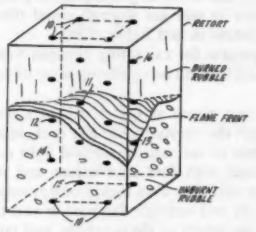
filling said annulus above said packer means with a corrosion inhibitor liquid.

4,266,608

METHOD FOR DETECTING UNDERGROUND CONDITIONS

John D. McCollum, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 925,178, Jul. 17, 1978. This application Aug. 3, 1979, Ser. No. 63,426
Int. Cl.³ E21B *43/243, 47/00, 47/12*
U.S. Cl. 166—250 **5 Claims**



1. In the in situ retorting of a subterranean carbonaceous stratum, a method for detecting non-uniform packing characteristics of rubblized material comprising

(a) providing one or more radio transmitters within a retort, each of said transmitters being capable of sensing and transmitting information concerning one or more properties of its surroundings, and

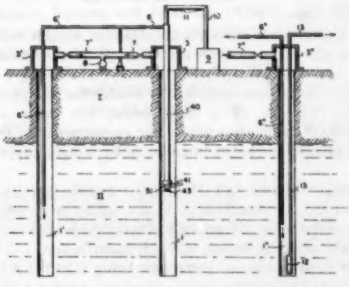
(b) monitoring said transmissions as an indication of the density distribution of the rubble in said retort.

4,266,609

METHOD OF EXTRACTING LIQUID AND GASEOUS FUEL FROM OIL SHALE AND TAR SAND

Josef Rom, Haifa, Israel; Israel Alterman, 7 Habrosh St., Savion, Israel (56915), and Josef Shwartz, Haifa, Israel, assignors to Technion Research & Development Foundation Ltd., Haifa and Isreal Alterman, Savion, both of, Israel

Filed Jun. 15, 1979, Ser. No. 48,733
Claims priority, application Israel, Nov. 30, 1978, 56088
Int. Cl.³ E21B *43/24, 43/247, 47/06, 36/04*
U.S. Cl. 166—251 **14 Claims**



10. A method of extracting kerogen from tar sand comprising the following steps in combination,

drilling at least one borehole from above, through the overlying soil and rock, into and through the tar sand layer,

stabilizing the borehole walls to prevent collapse thereof,

closing the top of said borehole by means of a tight cover provided with first duct means connected to gas or air pumping means and with means adapted to permit a laser beam to be introduced into said borehole, and with second duct means connected to at least one gas and/or liquid storage vessel,

guiding said laser beam through said first duct means into said borehole and irradiating the walls of said borehole along at least part of its entire length in the tar sand layer and causing the combustible matter in the tar sand to be ignited,

introducing air or oxygen under pressure into said borehole through said first duct means in a quantity sufficient to maintain the combustion and to cool the laser beam equipment, and

receiving and collecting combustion gases and evaporated kerogen in said gas storage vessel through said second duct means in said tight cover.

12. Apparatus for extracting kerogen from oil shale or tar sand located beneath an overlying layer of soil and rock, comprising

tight cover means at the mouth of a borehole extending through the overlying soil and rock, into and through the oil shale or tar sand layer, said tight cover means being provided with first duct means and with second duct means; said first duct means comprising an air inlet tube slidingly and sealingly fastened in said tight cover means over the mouth of the borehole, said tube being movable along a central longitudinal axis of the borehole in an upwardly and downwardly direction, said tube being provided with a mirror assembly firmly attached at its bottom end thereof, said mirror being capable of deflecting a laser beam sideways, said tube being further provided with means for introducing into its upper end the laser beam and for guiding the laser beam to said mirror assembly;

means to supply oxygen or air under pressure to said tube to simultaneously effect cooling of said mirror assembly and air or oxygen under pressure to support combustion in the borehole; and

means to remove kerogen from the borehole through said second duct means in said tight cover means, comprising at least one gas and/or liquid storage vessel downstream from said second dust means.

4,266,610

SULFONATE-COSURFACTANT MIXTURES FOR USE IN HARD BRINES DURING OIL RECOVERY OPERATIONS

John J. Meister, Gainesville, Fla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 28, 1978, Ser. No. 964,399
Int. Cl.³ E21B *43/22*
U.S. Cl. 166—273 **35 Claims**

1. A petroleum sulfonate-cosurfactant system mixture containing also as a protective agent a copolymer of an alkyl vinyl ether and maleic anhydride, the alkyl containing 1–4 carbon atoms, in an amount sufficient to render the mixture stabilized in the presence of a hard brine, the brine containing 250–100,000 ppm electrolyte, the components of the system being present in ranges in amounts by weight percent as follows:

protective agent, 0.01–15 having a specific viscosity of about 0.1–0.5, as determined on a solution of 1 gram of the copolymer in 100 mL of methyl ethyl ketone at 25° C.; the petroleum sulfonate, 0.01–15; cosurfactant, 1–7: the ratio of cosurfactant to surfactant being 0.25:1–1.5:1; and the ratio of protective agent to surfactant being 1:10–50:1; the cosurfactant being selected from the group consisting of C_3–C_6 aliphatic alcohols, ketones, aldehydes, esters, phenolic compounds, and amines.

11. A process for the tertiary recovery of oil from an oil-bearing formation which comprises injecting into such formation a mixture according to claim **1** and then injecting thickened water and an aqueous drive into said formation.

4,266,611

OIL RECOVERY METHOD EMPLOYING ALTERNATE SLUGS OF SURFACTANT AND FRESH WATER SOLUTION OF POLYMER

Issam S. Bousaid, and Benny K-C Ho, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Aug. 30, 1979, Ser. No. 71,218
Int. Cl.³ E21B *43/22*
U.S. Cl. 166—273 **27 Claims**

1. A method of recovering petroleum from a subterranean, petroleun-containing, permeable formation penetrated by at least one injection well and by at least one production well, said formation containing water having a salinity in excess of about 20,000 parts per million total dissolved solis, comprising injecting into the formation a predetermined volume of an aqueous, saline surfactant fluid, said surfactant being slightly soluble in a fluid having a salinity of from 50 to 100 percent of the salinity of the water present in the formation, and reducing interfacial tension between the petroleum and water to a value less than 100 millidynes/centimeter, said surfactant fluid being injected at the injection well and displacing petroleum in the formation toward the production well from which it is recovered to the surface of the earth, wherein the improvement comprises:

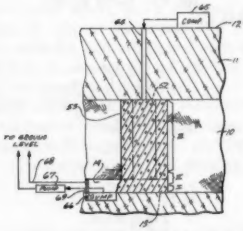
injecting from 2 to 15 discrete slugs of the surfactant fluid into the formation and separating successive slugs of surfactant fluid from one another by injecting sequentially therewith, separate isolation slugs consisting of fresh water polymer solutions having salinity less than 10,000 parts per million total dissolved solids, and containing a predetermined amount of a hydrophilic polymer.

4,266,612

IN SITU RECOVERY OF SHALE OIL

Gordon B. French, Rifle, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Division of Ser. No. 603,704, Aug. 11, 1975, Pat. No. 4,043,595, and a continuation-in-part of Ser. No. 505,276, Sep. 12, 1974, abandoned, Ser. No. 505,363, Sep. 12, 1974, abandoned, and Ser. No. 505,457, Sep. 12, 1974, abandoned. This application Mar. 22, 1977, Ser. No. 780,083
Int. Cl.³ E21B *43/247*; E21C *41/10*
U.S. Cl. 166—299 **4 Claims**



1. A method of preparing a subterranean mineral deposit for in-situ extraction of mineral values therefrom comprising the steps of:

selecting a portion of said deposit for processing;

providing an outlet in communication with an area defining a base of said selected portion of said deposit;

providing an inlet communicating with said selected portion at a point spaced from said outlet so that said portion lies substantially between said inlet and said outlet;

breaking said portion of said deposit into rubble defining a permeable zone extending between said inlet and said

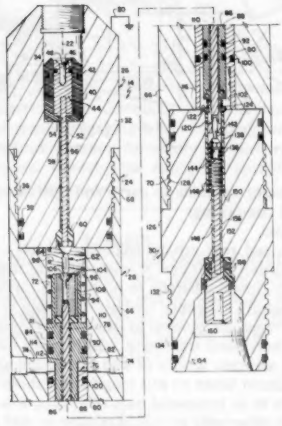
outlet and increasing in permeability from said inlet to said outlet so that the process of extraction may be initiated at the inlet and the extracted minerals transported through high permeability area to the outlet.

4,266,613

ARMING DEVICE AND METHOD

Gene T. Boop, Benbrook, Tex., assignor to SIE, Inc., Ft. Worth, Tex.

Filed Jun. 6, 1979, Ser. No. 46,110
Int. Cl.³ E21B *43/185;* H01H *35/38*
U.S. Cl. 166—299 **17 Claims**



1. A device, runnable into a well bore on a two path wireline providing a hot path and a ground path, for arming and disarming an explosive well tool having a hot lead and a ground, comprising

a housing having a passage opening through a side thereof;

first and second means on the housing for electrical connection respectively to the tool ground and the tool hot lead upon assembly of the tool to the device;

third and fourth means on the housing for electrical connection respectively to the wireline ground path and the wireline hot path upon assembly of the device to the wire line;

means providing a first electrical path through the housing between the first and third means; and

means for arming and disarming the tool including

means providing a normally open second electrical path, separate from the first path, between the second and fourth means including means responsive to a first predetermined pressure in the passage for completing the second electrical path; and

means short circuiting the first and second means in the open configuration of the second electrical path including means responsive to a second predetermined pressure in the passage for breaking the short circuit.

12. A method of handling an explosive well tool of the type having a hot lead and a ground with a wireline having a ground path and a hot path with an arming sub having a conductive hot connection and a conductive ground connection, comprising

disarming the well tool including connecting the arming sub ground connection between the tool ground and the wireline ground path, connecting the tool hot lead to the arming sub hot connection, connecting the arming sub hot connection to the wireline ground path and electrically isolating the wireline hot path;

running the tool into a well bore; and then

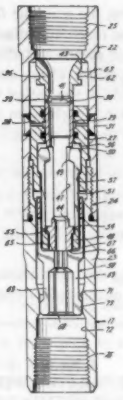
arming the tool including connecting the wireline hot path to the arming sub hot connection and disconnecting the arming sub hot connection from the wireline ground path.

4,266,614

VALVE

John V. Fredd, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Jul. 12, 1979, Ser. No. 56,886
Int. Cl.³ E21B *34/14*
U.S. Cl. 166—332 **15 Claims**



1. A valve comprising

a tubular body,

a side port in said body,

a pair of circumferential seals in the wall of said body straddling said port,

a valve member controlling flow through said port including a tubular funnel and a tubular liner arranged in end to end abutment and movable axially to pass said abutment across one of said seals,

means maintaining said funnel and liner in coaxial alignment,

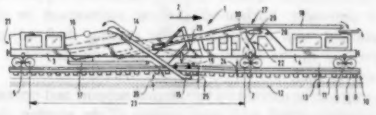
means holding said funnel and liner with no more than slight spacing therebetween while the juncture between said funnel and liner passes over one of said seals as the valve moves between open and closed position and permitting said funnel and liner to move apart in response to the valve member moving to open position.

4,266,615

SELF-PROPELLED BALLAST CLEANING MACHINE

Josef Theurer, Vienna, and Friedrich Oellerer, Linz, both of Austria, assignors to Franz Plasser Bahnbauмaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Jan. 7, 1980, Ser. No. 110,136
Claims priority, application Austria, Jan. 22, 1979, 454/79
Int. Cl.³ E01B *27/06*
U.S. Cl. 171—16 **9 Claims**



1. A self-propelled machine for cleaning ballast supporting a railroad track and comprising

(a) a machine frame comprised of two frame parts having abutting ends,

(b) a pivotal connection between the abutting ends of the frame parts and arranged to enable pivotal movement of the frame parts in vertical and horizontal directions,

(c) a drive means interconnecting the abutting frame part ends and operable to effectuate the pivotal movement in at least one of said directions,

(d) three track-bound undercarriages supporting the machine frame on the track,

(1) one of the undercarriages being arranged at the pivotal connection and being vertically adjustable with the two frame parts,

(e) means mounted on the machine frame for receiving the ballast, cleaning the received ballast and redistributing the cleaned ballast, said means including

(1) a ballast excavation chain comprising a horizontal course immersible in the ballast below the track,

(2) a ballast screening mechanism for cleaning the ballast and arranged to receive ballast from the ballast excavation chain, and

(3) respective conveyor means for redistributing the cleaned ballast and for removing waste, the conveyor means being arranged to receive the cleaned ballast and the waste, respectively, from the ballast sceening mechanism, and

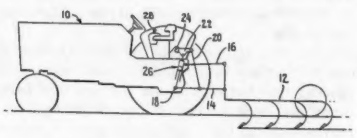
(f) a device for raising the track arranged in the range of the horizontal course of the ballast excavation chain.

4,266,616

DRAFT SENSING APPARATUS WHEREIN EFFECT OF VERTICAL DEFLECTION REDUCED TO INSIGNIFICANT LEVELS COMPARED TO HORIZONTAL DEFLECTION

Otto Mueller, Jr., Detroit, Mich., assignor to Massey-Ferguson Inc., Detroit, Mich.

Filed Jun. 29, 1979, Ser. No. 53,620
Int. Cl.³ A01B *63/112*
U.S. Cl. 172—7 **13 Claims**



1. A tractor draft sensing apparatus of the type having an elongated bendable transversely extending generally horizontal shaft mounted in spaced apart fulcrum supports in a tractor housing and draft members connected to the shaft at points spaced from the fulcrum supports whereupon forces in the draft members cause the shaft to bend, the draft sensing apparatus being responsive to bending of the shaft and being characterized by

a first support, a portion of which is disposed to one side of the shaft;

a second support mounted on said portion of the first support for movement relative thereto, the second support having a generally horizontal surface maintained in sliding contact with a surface of the sensing shaft adjacent a portion of the sending shaft whose movement is to be sensed; and

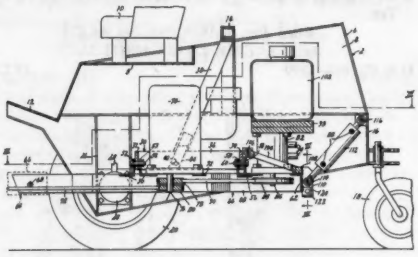
sensing means carried by the second support and operatively interconnected with said portion of the sensing shaft to detect movement of the sensing shaft relative to said second support in a horizontal plane, the parts being so arranged and constructed that the effect of vertical deflection of the sensing member will be reduced to insignificant levels as compared to horizontal deflection.

4,266,617

TRACTOR WITH FULL-FLOATING TOOL BAR

David L. Mullet, Hesston; Raymond J. Rilling, Moundridge, and Elmer D. Voth, Newton, all of Kans., assignors to Excel Industries, Inc., Hesston, Kans.

Filed Feb. 23, 1979, Ser. No. 14,291
Int. Cl.³ A01B *59/048, 63/108;* **B60K** *9/00*
U.S. Cl. 172—76 **3 Claims**



1. A tractor operable to carry and operate a useful implement, and comprising:

a. a frame,

b. front and rear ground-engaging wheels carried by and supporting said frame, at least certain of said wheels being power-driven whereby to propel said tractor,

c. a generally horizontal tool bar extending longitudinally in said frame, and pivoted to said frame intermediate its ends on a horizontal transverse axis disposed intermediate the front and rear wheels of said frame, and also for pivotal movement about an axis longitudinal thereto and at right angles to its horizontal transverse axis, whereby said tool bar is universally pivotable relative to said frame,

d. means connecting said implement detachably to the forward end of said tool bar, the universal pivotability of said tool bar permitting said implement to follow accurately unevenness of the ground contour both longitudinally and laterally of the line of travel of the tractor, said implement being of sufficient weight to overbalance the forward end of said tool bar downwardly and being provided with its own ground-engaging wheels,

e. a hold-down member carried by said tractor frame and normally spaced above the rearward end of said tool bar whereby to permit free universal tilting of said tool bar,

f. power means carried by said frame and operable to lower and press said hold-down member downwardly against the rearward end of said tool bar, whereby to pivot said tool bar to elevate said implement above the ground, said hold-down member engaging said tool bar at both sides of its longitudinal pivotal axis whereby to level it on said axis,

g. a prime mover mounted on said tool bar, and

h. drive means operably interconnecting said prime mover to said implement.

4,266,618

ARTICULATED PLOW WITH CENTRAL SUPPORT PROVIDING COUNTER MOMENT FOR REAR SECTION

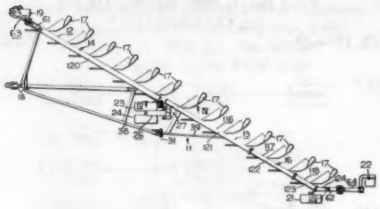
Keith A. Wheeler, and Dawson W. Hastings, both of La Porte, Ind., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Sep. 4, 1979, Ser. No. 72,422
Int. Cl.³ A01B *15/14*
U.S. Cl. 172—314 **8 Claims**

5. An articulated plow having end-to-end front and rear sections each having a diagonal main frame with plow bottoms connected thereto at predetermined intervals, an articulation joint connecting the adjacent ends of the frames on a horizontal transverse articulation axis, front and rear ground engaging wheels connected, respectively, in supporting relation to the

front end of said front section and to the rear end of the rear section, characterized by

a central ground engaging wheel rotatably mounted on the front end of said rear section by means fixing said central ground engaging wheel to move with said rear section



about said articulation axis about said articulation axis, said central ground engaging wheel engaging the ground a predetermined distance forwardly of said transverse articulation axis whereby the rear plow section is subjected to a counter moment.

4,266,619

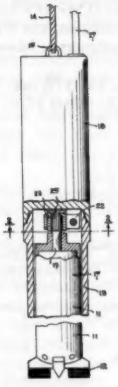
DOWN HOLE CYCLOIDAL DRILL DRIVE

Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif. 91406

Continuation-in-part of Ser. No. 64,046, Aug. 6, 1979, and a continuation-in-part of Ser. No. 63,840, Aug. 6, 1979. This application Sep. 17, 1979, Ser. No. 76,194

Int. Cl.³ E21B *7/24*

U.S. Cl. 175—55 **6 Claims**



1. A drive system for cycloidally driving a drill around the side walls of a bore hole to effect rotation of a cutting bit comprising:

a drill stem, said bit being mounted on the down hole end of said stem, said stem having its diameter slightly less than that of said bore hole,

an eccentric mass rotor,

means for rotatably supporting said rotor within said drill stem at a down hole position therealong spaced from the opposite ends of said stem and in an upper region of said stem, and

means for rotatably driving said rotor, thereby generating a rotating force vector in a plane generally transverse of the bore hole, said force vector acting on said upper region of said system so as to cause said upper region of said system formed by the stem and drill bit to precess with a conical motion around the side wall of the bore hole in forceful driving engagement thereagainst, with said bit rotating as a pivot at the apex of said conical motion in pinned down engagement against the bottom of said bore hole.

4,266,620

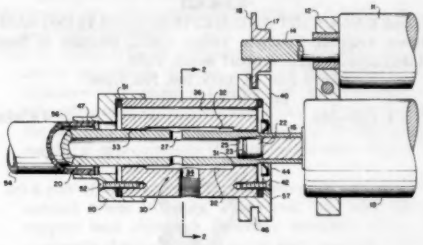
HIGH PRESSURE FLUID APPARATUS

John E. Wolgamott, 2055 Ingalls, Edgewater, Colo. 80214, and Gerald P. Zink, 0259 County Rd. 216, Durango, Colo. 81301

Filed Feb. 11, 1980, Ser. No. 120,709

Int. Cl.³ E21B *21/02*

U.S. Cl. 175—215 **29 Claims**



1. An apparatus for transferring fluid from a stationary source into an elongated tube at a relatively high pressure, said elongated tube adapted to be rotated by a rotary power source, said apparatus comprising:

means for directing substantially all of said fluid from said stationary source into said tube at a location intermediate the length of said tube and at a relatively high pressure when said fluid directing means is in a first position and for directing substantially all of said fluid from said stationary source to a low pressure region juxtaposed to said tube when said fluid directing means is in a second position; and

means for selectively and variably positioning said fluid directing means at and between said first and said second position, said positioning means being connected to fluid directing means.

4,266,621

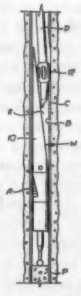
WELL CASING WINDOW MILL

Kenneth A. Brock, Lafayette, La., assignor to Christensen, Inc., Salt Lake City, Utah

Continuation of Ser. No. 808,806, Jun. 22, 1977, abandoned. This application Aug. 14, 1978, Ser. No. 933,469

Int. Cl.³ E21B *10/46*

U.S. Cl. 175—329 **40 Claims**



1. A rotary mill for elongating windows in a well casing off a casing whipstock comprising: a body connectible at one end to a rotary drill pipe string and having a substantially flat face

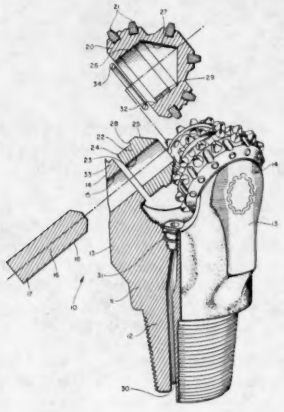
at its other end, an axially extended gauge surface engageable with said whipstock to force said body laterally, cutting means on said body and extending from the periphery of said face across the center of said face for elongating a window in the casing responsive to rotation of the mill, said body having a portion thereon projecting outwardly from said body and providing surface means merging with said face for engaging a fixed structure to produce a force acting laterally on said body to move said face off center with respect to the edge of the casing.

4,266,622

ROTARY ROCK BIT AND METHOD OF MAKING SAME

Edward Vezirian, Fountain Valley, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Jan. 15, 1979, Ser. No. 3,246
Int. Cl.[3] E21B *10/20*
U.S. Cl. 175—366 **4 Claims**



1. A rotary rock bit comprising:

a one piece bit body having an external annular gage surface and a central axis, said bit body having an upper pin portion which is adapted to be connected to the lower end of a drill column, said bit body further having at least two legs extending downwardly from the rest of the bit body substantially parallel to said central axis along the gage surface, said legs forming an open area therebetween, below the rest of the bit body;

each leg further having a bore extending therethrough;

a cone type cutter corresponding to each leg, each cutter having an interior cavity, each cutter being positioned within said open area such that the cavity of each cutter is aligned with the bore of a respective leg;

a separate journal pin mounted within the bore of each leg, each journal pin further having a portion extending into the cavity of the registering cone cutter; and

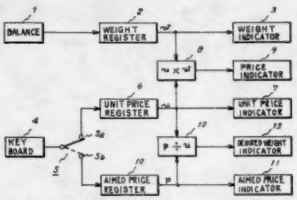
means for retaining each cutter on the respective leg, said retaining means comprising a thrust element having a central bore, each thrust element being located within the cavity of each cone cutter and retained therein, the portion of each journal pin extending into the cavity of a respective cone cutter extending into the bore of the thrust member and being secured thereto, each thrust member further having an annular shoulder formed thereon, said retaining means further comprising an annular member engaging the shoulder of each thrust member within the cavity of each cone cutter, each annular member being secured to the respective cone cutter, by means of a high energy beam weld which fuses the mating surfaces of the annular member and the cone cutter.

4,266,623

PRICE CALCULATING BALANCE WITH AIMED PRICE INPUT

Shozo Kawanishi, Kobe, and Masami Yamanaka, Miki, both of Japan, assignors to Yamato Scale Company, Limited, Hyogo, Japan

Filed Jan. 7, 1980, Ser. No. 110,342
Int. Cl.[3] G01G *23/22*
U.S. Cl. 177—25 **2 Claims**



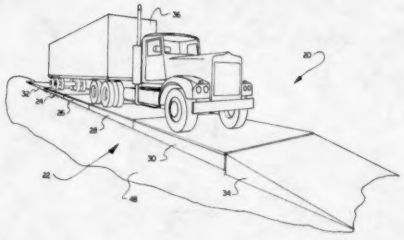
1. A price calculating balance, comprising means for measuring weight and encoding and storing the measured value, means for presetting and storing unit price, a multiplier for multiplying the contents of said unit price storing means and weight storing means and price indicating means for indicating the result of said multiplication, said balance further comprising means for presetting and storing an aimed price, a divider for dividing the content of said aimed price storing means by the content of said unit price storing means, and desired weight indicating means for indicating the result of said division.

4,266,624

WEIGHING APPARATUS

Benny N. Dillon, Worthington, and William C. Susor, Westerville, both of Ohio, assignors to Masstron Scale, Inc., Columbus, Ohio

Filed Jul. 13, 1979, Ser. No. 57,491
Int. Cl.[3] G01G *21/22, 19/02*
U.S. Cl. 177—253 **18 Claims**



1. A weighing apparatus adapted to be disposed on a support surface, said weighing apparatus comprising a longitudinally extending platform, said platform including a pair of parallel box support sections which are disposed along longitudinally extending edge portions of said platform and extend throughout the length of said platform, each of said box support sections including a pair of spaced apart longitudinally extending sidewalls, a bottom wall extending between said sidewalls, and a top wall interconnecting said sidewalls and extending parallel to said bottom wall, each of said box support sections having an opening in its bottom wall adjacent to an end of the box support section, a plurality of beams extending between said box support sections, each of said beams having a longitudinal central axis which extends transversely to the longitudinal central axes of said box support sections, and plate means for spanning the space between said box support sections and said beams, and a plurality of load responsive units each of which is

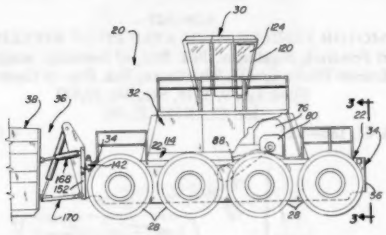
mounted in one of said box support sections and extends through an opening in the bottom wall of said one box support section to transmit a load to the support surface.

4,266,625

TRACTION VEHICLE

Fay T. Garner, and Jerauld D. Joubert, both of Longmont, Colo., assignors to Melroe Multi-Wheel, Longmont, Colo.

Filed Jan. 16, 1978, Ser. No. 869,697
Int. Cl.[2] B62D *11/04*; E02F *3/76*
U.S. Cl. 180—6.48 **7 Claims**



1. A traction vehicle comprising:

(a) a modular frame structure comprising the following elements permanently and rigidly fixed to one another to define a structurally rigid unified frame module for said traction vehicle:

(i) a pair of drive assembly housings, each of said drive assembly housings being generally of boxlike construction, said pair of housings extending longitudinally of said frame module and defining opposite transverse sides thereof;

(ii) at least one upper frame plate member transversely connected between said drive assembly housings at upper positions thereon;

(iii) at least one lower frame plate member transversely connected between said drive assembly housings at positions thereon lower than said upper frame plate member;

(iv) a plurality of reinforcing members connected between said drive assembly housings and at least one of said frame plate members, said reinforcing members extending substantially transversely inward from said drive assembly housings at positions intermediate the longitudinal ends of said frame module;

(v) a pair of frame end members, each end member extending substantially transversely of said frame module at longitudinal ends thereof, each end member being attached to the pair of drive assembly housings and to at least one frame plate member;

(vi) a plurality of wall members connected to and extending transversely inwardly from said drive assembly housings, each of said wall members being positioned at longitudinal locations intermediate longitudinal ends of said frame module, each of said wall members further connecting to and extending upwardly with respect to at least one frame plate member; and

(vii) at least one container integrally formed within said frame module intermediate said pair of drive assembly housings and intermediate the longitudinal ends of said frame module, said one container being defined in part by at least one drive assembly housing and by at least one plate member and by at least one wall member;

(b) at least two separate power train assemblies, one of said power train assemblies being operatively associated with each drive assembly housing, each of said power train assemblies supplying reversible motive traction power to one lateral side of said vehicle, each power train assembly comprising:

(i) at least two driving wheel members;

(ii) one axle shaft operatively connected for rotating each wheel member, each axle shaft extending transversely through an associated drive assembly housing and positioning the connected driving wheel member laterally outwardly spaced from said drive assembly housing;

(iii) means interconnecting all of said axle shafts within one drive assembly housing for transmitting rotating power simultaneously to all of said axle shafts within the drive assembly housing;

(iv) motive power supply means associated with said interconnecting transmitting means for supplying motive power to rotate said axle shafts;

(c) tower structure operatively connected to extend above said frame module;

(d) an operator's cab positioned on said tower structure above said frame module, said cab including sidewall structure comprising a plurality of upward extending sidewall panels operatively connected together, each of the sidewall panels generally slopes outwardly and upwardly at approximately the same angle with respect to a vertical reference; and

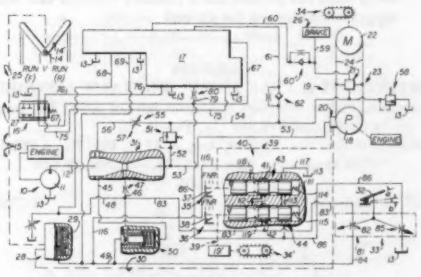
(e) a pair of main support bars extending upward from the support tower structure within said cab, each of said support bars extending generally upwardly along the outwardly sloping sidewall panels and transversely across said cab at an upward position therein, said support bars being essentially parallel to one another and extending generally transversely of said frame module within said cab, said pair of main support bars affording structural rollover protection for said cab.

4,266,626

STEERING SYSTEM WITH INTERLOCK VALVES

Lucien B. Shuler, Bettendorf, Iowa, assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00415, § 371 Date Jun. 13, 1979, § 102(e) Date Jun. 13, 1979, PCT Pub. No. WO80/02824, PCT Pub. Date Dec. 24, 1980.
This PCT application filed Jun. 13, 1979, Ser. No. 89,119
Int. Cl.[3] B62D *11/04*
U.S. Cl. 180—6.48 **10 Claims**



1. In a vehicle having a first drive (**34**), a second drive (**34'**), fluid actuating means (**19,19'**) for selectively varying the speed and directions of movement of said first (**34**) and second (**34'**) drives, control means (**15**) for controlling said fluid actuating means (**19,19'**), and first (**35**) and second (**36**) steering means each being movable to a first (F), second (N), and third (R) position of operation for selectively controlling said fluid actuating means (**19,19'**), independently of actuation of said control means (**15**), to steer said vehicle, the improvement comprising interlock means (**40**) for stopping said first and second drives and said vehicle in response to movement of both said first (**35**)

and second (36) steering means to preselected ones of said positions of operation, said interlock means (40) including first (43) and second (44) valve means for actuation in response to movement of said first (35) and second (36) steering means, respectively, to stop said first and second drives (34,34') and said vehicle when both of said first (35) and second (36) steering means are moved to their second (N) or third (R) positions or when one of said first (35) and second (36) steering means is moved to its second position (N) and the other one thereof is moved to its third position (R).

4,266,627

TRAVELING ASSEMBLY AND WHEEL SUSPENSION FOR A ROLLING AND STEPPING VEHICLE

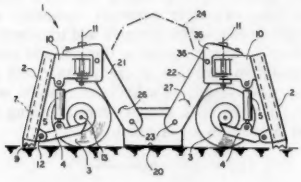
Ernst Lauber, Thun, Switzerland, assignor to Willy Habegger, Thun, Switzerland

Filed Feb. 23, 1979, Ser. No. 14,687

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1978, 2807517

Int. Cl.[3] B62D 57/02

U.S. Cl. 180—8 B 10 Claims



1. A wheel assembly, especially for a rolling and stepping machine, comprising:

a wheel leg;

a support ram telescopingly received in said leg and extensible therefrom to support said machine upon the ground;

means for extending said ram from said leg;

a lever articulated at one end to a lower portion of said leg;

a wheel journaled on an opposite end of said lever; and

actuating means connected to said lever for swinging said wheel between a position wherein said wheel is drawn away from the ground and a position wherein said wheel supports said leg on the ground.

4,266,628

DIFFERENTIAL CASE AND PUSH-FRAME ASSEMBLY

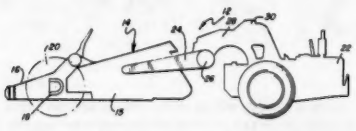
George A. Fisher, and Gary E. Mason, both of Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 822,843, Aug. 8, 1977, Pat. No. 4,183,551.

This application Aug. 24, 1979, Ser. No. 69,449

Int. Cl.[3] B60K 1/00

U.S. Cl. 180—54 F 3 Claims



1. A push frame assembly for a scraper bowl comprising: a tubular structural member, a pair of spaced apart side walls, each side wall having an aperture therethrough, said tubular member structurally spanning the distance between said spaced apart said walls, the opposite end portions of said tubular member extending through said apertures and being structurally connected directly to said side walls, a spreader tube connected directly to upwardly projecting portions of said spaced apart side walls, a rear plate connected directly to portions of the side walls remote from said spreader tube, said tubular member having a rearwardly facing engine drive line receiving opening there-through, bracket means including two brackets connected to the front of said tubular member to which two ejector cylinders are adapted to be connected, and engine support mounts secured to the top surface of said tubular member for supporting an engine.

4,266,629

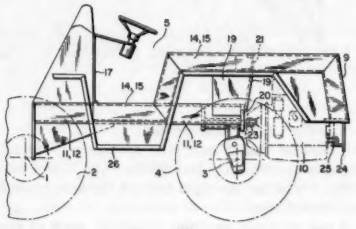
MOTOR VEHICLE WITH AXLE PIVOT STEERING

Karl Friedrich, Sipplingen, Fed. Rep. of Germany, assignor to Kramer-Werke GmbH, Uberlingen, Fed. Rep. of Germany

Filed Apr. 9, 1979, Ser. No. 28,437

Int. Cl.[3] B62D 25/08

U.S. Cl. 180—252 6 Claims



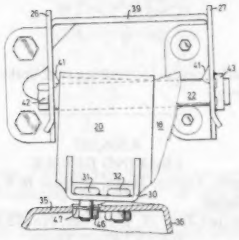
1. Motor vehicle with axle pivot steering comprising a rigid frame having a front end and a rear end with a longitudinal direction extending in the front end-rear end direction and a transverse direction extending across the longitudinal direction, at least two vehicle axles supported on and extending in the transverse direction of said frame with at least one of said axles comprising a steering axle having swivelling wheels thereon, an engine mounted on said frame, a vehicle body including a driver's seat mounted on said frame, said frame including first beams extending in the longitudinal direction of said frame and second beams extending in the transverse direction of said frame, and said vehicle body having an access to the driver's seat over said first beams, wherein the improvement comprises that said frame includes at least two frame portions each extending in the longitudinal direction and comprising a first frame portion and a second frame portion, said first and second frame portions each comprising said second beams and different ones of said first beams, said first beams of said first frame portion having an upper height lower than the upper height of said swivelling wheels and defining the lower height limit of the access in said vehicle body to the driver's seat, and said first beams of said second frame portion each having a arched section extending upwardly over the upper height of said swivelling wheels and forming an arch-like portion for said swivelling wheels so that said swivelling wheels can be swivelled without contacting said first beams of said second frame portion, said first beams of said first and second frame portions extend in generally parallel spaced relation with said first beams of said first frame portion located closer together than said first beams of said second frame portion and said first beams of said first frame portion arranged symmetrically between said first beams of said second frame portion, and said second beams of said first frame portion are rigidly connected to said first beams thereof and said second beams of said second frame portion are rigidly connected to said first beams thereof and wherein said steering axle is supported on said first beams of said first frame portion and is spaced below said first beams of said second frame portion.

4,266,630

POWER UNIT SUSPENSION IN MOTOR VEHICLES

Dan L. Nilsson, Sjuntorp, and Joel L. Danielsson, Trollhättän, both of Sweden, assignors to Saab-Scania Aktiebolag, Sodertalje, Sweden

Filed Apr. 3, 1979, Ser. No. 26,796
Claims priority, application Sweden, Apr. 11, 1978, 7804032
Int. Cl.³ B60K *5/00*
U.S. Cl. 180—291 **12 Claims**



1. An arrangement for suspending a power unit in a forward engine compartment of a vehicle, for controlling during a collision the rearward movement of the power unit in the engine compartment caused by excessive forces in the lengthwise direction of the vehicle, comprising a forward resilient mounting and two rear resilient mountings one on either side of the power unit connecting the power unit to structural portions of the vehicle body, at least one of said rear resilient mountings, including first and second members and a resilient body separating said first and second members, said first member being attached to the power unit, said second member being attached to structural portions of the vehicle body, characterized by the combination that said rear mountings allow the first member a limited rearward movement, in a direction generally opposite to the normal direction of travel of the vehicle, relative to the second member while absorbing deformation work in the rear mounting, said rearward movement being limited by fixed means, and that the attachment of the rear mounting to one of the group consisting of the power unit and the structural portions of the vehicle body includes means for allowing a controlled outer deformation on the application of a force exceeding a predetermined level, so that the power unit can be given a total displacement in the engine compartment to the point of contact with a cowl panel at the rear of the engine compartment before the connection formed between the power unit and the structural portions of the vehicle body by means of the rear mounting is destroyed.

4,266,631

EXTENSION LADDERS WITH ROTARY HOOK LOCKS

Clayton E. Larson, Brooklyn, N.Y., and Edward H. Lemp, Bellows Falls, Vt., assignors to White Metal Rolling & Stamping Corp., Brooklyn, N.Y.

Filed Mar. 26, 1980, Ser. No. 133,983
Int. Cl.³ E06C *7/06*
U.S. Cl. 182—211 **7 Claims**

1. In an extension ladder having a bed section formed of a pair of parallel side rails and a plurality of equally spaced apart step members fixed transversely upon the side rails and a fly section formed of first and second parallel side rails and a plurality of transverse step members fixed upon the side rails spaced apart equivalent to the spacing of the step members of said bed section, the improvement which comprises:

a pair of rotary automatic hook locks each comprising

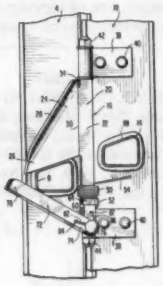
a rotatable hook unit having an elongated tubular portion with a contoured hook portion extending laterally therefrom, said hook portion having a triangular shaped outboard end,

a longitudinal shaft fixed spaced apart from and parallel to a side rail of the ladder by a pair of brackets fastened to that side rail,

said hook unit being rotatably positioned on said shaft between said brackets for rotation between a hooking position and a passing position,

first spring means biasing said hook unit toward said hooking position,

a stop member comprising a body portion and a transverse



leg portion positioned on said shaft between one end of said hook unit and one of said brackets for rotation with said hook unit,

an elongated toggle pivoted at one end upon said leg portion of said stop member, said

toggle being long enough so the free-end thereof can swing into contact with said hook portion outboard end, and

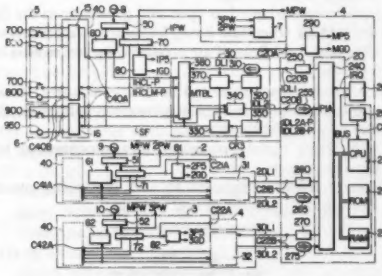
second spring means biasing said toggle into said outboard end contacting position.

4,266,632

ELEVATOR SYSTEM

Kanji Yoneda; Takeo Yuminaka, and Masao Nakazato, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 19, 1979, Ser. No. 4,878
Claims priority, application Japan, Jan. 20, 1978, 53/4261
Int. Cl.³ B66B *1/18*
U.S. Cl. 187—29 R **17 Claims**



1. An elevator system comprising:

a structure having a plurality of floors,

a plurality of elevator cars mounted in parallel for movement relative to the floors,

at least two hall-call registration means to register calls for service from the floors,

a plurality of elevator car operation control means each of which is respectively provided in each of said elevator cars, for operatively controlling the elevator cars in accordance with signals for service of the elevator cars,

system control means to deliver the signals for service of the elevator cars to the elevator car operation control means

for systematically controlling the elevator car operation control means,

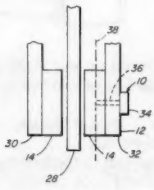
at least two interface means for respectively connecting the hall-call registration means and at least two of the elevator car operation control means to deliver calls for service of the elevator cars received from the hall-call registration means to the elevator car operation control means, and duplicated hall-call registration systems each of which connects, in turn, one of hall-call registration means, one of interface means, one of elevator car operation control means and the system control means.

4,266,633

BRAKE WEAR WARNING SYSTEM

William A. Barabino, North Reading, and Edward J. Cook, South Hamilton, both of Mass., assignors to Safety Research & Engineering Corporation, N. Reading, Mass.

Filed Mar. 8, 1979, Ser. No. 18,449
Int. Cl.³ F16D *66/02*
U.S. Cl. 188—1 A **5 Claims**



1. A brake wear warning system for use on a wheeled vehicle equipped with brakes in which the brakes include at least one rotatable brake member and at least one relatively fixed element mounted for limited movement to and away from said member, said element provided with a lining adapted to frictionally engage said member upon actuation of said element, comprising

(a) an acoustical signal generator mounted to said element and adapted to produce an acoustical signal when a flow of ambient air passes therethrough,

(b) ambient air flow control means connected to said generator and to said lining,

(c) said means adapted to open said generator to the flow of ambient air when said lining has worn to a predetermined thickness, said flow of air produced by the motion of said vehicle,

(d) detector means mounted to said vehicle for sensing an acoustical signal from said generator and producing an electrical signal therefrom,

(e) electrical signal processing means connected to said detector means, and,

(f) alarm means connected to said processing means for alerting the operator of said vehicle.

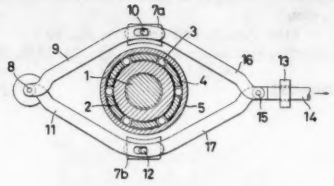
4,266,634

BRAKING DEVICE

Tadashi Hishida, Sakai, Japan, assignor to V.I.V. Engineering Co., Ltd., Japan

Filed Jul. 13, 1979, Ser. No. 57,374
Int. Cl.³ F16D *51/22*
U.S. Cl. 188—75 **5 Claims**

1. A braking device comprising a circular rotor coaxially fixed to the shaft of a rotary machine, a brake drum made of a material capable of elastic deformation and mounted on said circular rotor, balls or rollers interposed between said brake drum and said circular rotor, spacers arranged between said balls or rollers for holding said rollers at regular intervals, said balls or rollers adapted for rotation around the axis of said rotor as long as said brake drum maintains circularity and adapted to be locked between said brake drum and said circular rotor when said brake drum is caused to deviate from



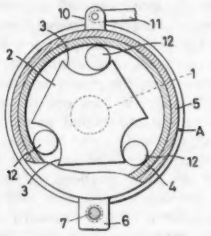
circularity, and a means for causing said brake drum to deviate from circularity.

4,266,635

BRAKING DEVICE

Masahiko Kondo, Osaka, Japan, assignor to V.I.V. Engineering Co., Ltd., Japan

Filed Jun. 29, 1979, Ser. No. 53,208
Int. Cl.³ F16D *51/00*
U.S. Cl. 188—82.84 **5 Claims**



1. A braking device comprising a rotor coaxially affixed to a shaft of a rotary machine, said rotor having a plurality of concavities about the outer periphery thereof, each of said concavities having an axis of symmetry perpendicular to the axis of rotation of said shaft, a brake drum enclosing said rotor, said drum having a concentric and an eccentric position with respect to said rotor, a roller bearing means interposed between the internal surface of said brake drum and each of said concavities in the rotor and adapted for planetary motion around the axis of said rotor when said brake drum is in the concentric position with respect to said rotor and adapted to be locked between said rotor and said brake drum when said brake drum is moved to the eccentric position with respect to said rotor, and means for moving said brake drum to and from said concentric and eccentric positions.

4,266,636

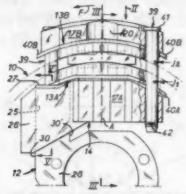
CROWN-TYPE CALIPER BRAKE

Micher Bacher, Garges-les-Gonesse, France, assignor to Société Anonyme Francaise du Ferodo, France

Filed Feb. 1, 1979, Ser. No. 8,698
Claims priority, application France, Feb. 3, 1978, 78 03070
Int. Cl.³ F16D *53/00*
U.S. Cl. 188—76 **21 Claims**

1. A crown-type caliper brake comprising a single fixed support therefor, a rotatable generally cylindrical braking member, two brake pads disposed respectively inside and outside said cylindrical braking member, and a generally C-shaped caliper member mounted for radial movement with respect to said cylindrical braking member and radially straddling said brake pads and said braking member; said caliper member including a first limb, a second limb and an intermediate portion interconnecting said limbs; said first limb having

force-applying means cooperable with a first of said brake pads and said second limb being cooperable with a second of said brake pads so that in response to said force-applying means and transmission of a corresponding force by said caliper member said brake pads are both applied against said braking member along a generally radial gripping axis passing through central areas of said brake pads; wherein the improvement comprises said fixed support having a single leg member extending generally parallel to the gripping axis, said caliper member having a lobe located completely to one side of said force-applying means, a guideway of closed contour extending substantially through said lobe for slidable mounting said caliper member on said leg member, said leg member having two sides lying in planes parallel to and both being spaced to said one side of an axial plane containing the gripping axis and said two sides being in sliding contact with corresponding portions of said guideway.



4,266,637

NON-RETURN DEVICE

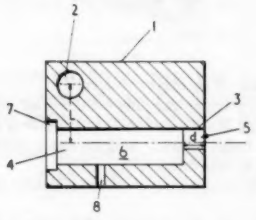
Norman L. C. Parfitt, Ashby-de-la-Zouch, England, assignor to Coal Industry (Patents) Limited, London, England

Continuation of Ser. No. 873,718, Jan. 30, 1978, abandoned. This application Oct. 19, 1979, Ser. No. 86,306

Claims priority, application United Kingdom, Jan. 28, 1977, 03631/77

Int. Cl.³ F16D *65/54*

U.S. Cl. 188—196 P **6 Claims**



1. A non-return device consisting essentially of:

a housing having a bore therein, said bore having a constant cross-sectional area smooth-walled first section, a constant cross-sectional area smooth-walled second section adjacent said first section and a step discontinuity defining a boundary between said first and second adjacent sections, said second section having a cross-sectional area larger than that of said first section and said first section having pointed rod engaging edges at the terminating ends thereof, said housing being mounted on a pivot which is above and perpendicular to said bore and is asymmetrically disposed with respect to the length of said bore, and a smooth rod passing through said first and second bore sections and having a cross-sectional shape the same as but a cross-sectional area marginally smaller than that of said first bore section, said rod engaging with and jamming against said rod engaging edges of said first bore section upon relative movement between said rod and housing in one direction, caused solely by the action of gravity rotating the housing about the pivot, and moving freely in said bore upon relative movement between said rod and housing in an opposite direction caused by said housing rotating about said pivot against the action of gravity such that relative longitudinal movement between said rod and said housing only occurs when said housing is pivoted against the action of gravity in said opposite direction.

4,266,638

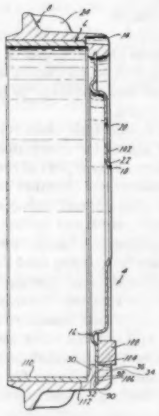
COMPOSITE BRAKE DRUM

Larry D. Petersen, Garden City, and Stanley C. Squires, Bloomfield Hills, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 858,913, Dec. 8, 1977, abandoned. This application Jun. 18, 1979, Ser. No. 49,687

Int. Cl.³ F16D *65/10*

U.S. Cl. 188—218 R **8 Claims**



1. A compact composite brake drum for mounting to the wheel and axle shaft of a motor vehicle which comprises:

a cast iron braking ring comprising a rough outer surface and a smooth inner braking surface;

a substantially biplanar stamped steel drum back comprising:

(1) a midsection with a center hole and spaced wheel mounting holes in a first plane;

(2) a periphery with a first axially facing surface facing said ring and a second axially facing surface facing away from said ring, and with a plurality of holes and voids spaced about its outermost edge in a second plane;

(3) an annular convolute integrating said first and second planes and extending in part in a direction parallel to the axis of rotation of said drum from said first plane and toward said braking surface;

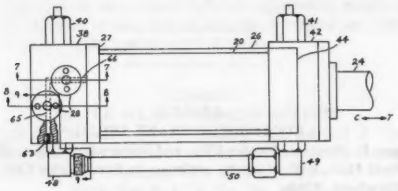
a diecast barrel of light metal of specific gravity lower than said cast iron braking ring or said stamped steel drum back, said light metal filling said peripheral holes and voids of said drum back, and bonding with said rough outer surface of said braking ring to provide a unitary brake drum and said die cast barrel having a radially extending portion axially interposed between said drum back and said braking ring to provide an axially facing bond between said first axially facing surface of said drum back and said radially extending and interposed portion.

4,266,639

QUICK RESPONSE HYDRAULIC SHOCK SUPPRESSOR FOR PIPING SYSTEMS

Arthur P. Schloth, Coventry, R.I., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed May 10, 1979, Ser. No. 37,782
Int. Cl.[3] F16F 9/18
U.S. Cl. 188—311 35 Claims



1. A hydraulic shock suppressor for controlling the rate of movement of a supported system relative to a supporting structure, comprising:

a hydraulic cylinder;

a piston disposed for relative movement within said cylinder defining a fluid chamber, one of said cylinder and piston being adapted to be connected to the supported system and the other being adapted to be connected to the supporting structure;

a port formed in said fluid chamber; and

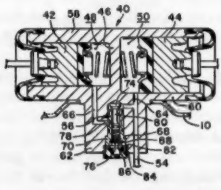
control valve means for controlling the rate of hydraulic fluid flow through said port in response to the pressure of hydraulic fluid in said chamber and the resultant pressure drop across said control valve means created by force applied to said piston and cylinder tending to cause their relative movement, wherein said control valve means includes means for passing fluid through said port at a rate that varies directly with the applied force and resultant pressure drop across said control valve means for forces up to a first level and means responsive to the pressure drop across said control valve means for maintaining the fluid flow rate through said port substantially constant within predetermined limits for applied forces up to a substantially higher second level, whereby the supported system may move slowly with little restriction when forces below the first predetermined level are applied but is restricted to a rate of movement within a predetermined range when higher forces are applied up to said second predetermined level.

4,266,640

WHEEL CYLINDER

Ji Y. Woo, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jul. 20, 1979, Ser. No. 58,973
Int. Cl.[3] B60T 8/12
U.S. Cl. 188—363 6 Claims



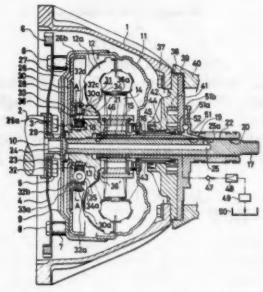
1. In a wheel cylinder having a housing forming a pair of chambers separated from each other by a common wall, a pair of pistons movably disposed within respective chambers and opposing respective brake shoes, said housing including passage means for communicating fluid pressure to said pair of chambers, characterized by pressure responsive valve means disposed within said housing passage means, said pressure responsive valve means being movable in response to fluid pressure within said passage means to close a portion of said passage means so as to substantially maintain one of said chambers at a predetermined pressure level while said other chamber is increasing in fluid above said predetermined pressure level during actuation of said wheel cylinder.

4,266,641

LOOK-UP TORQUE CONVERTER WITH COMPACT ARRANGEMENT OF DAMPER

Yoshio Sunohara, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 23, 1979, Ser. No. 23,373
Claims priority, application Japan, Apr. 4, 1978, 53-38850
Int. Cl.[3] F16D 3/66, 45/02, 33/00
U.S. Cl. 192—3.28 5 Claims



1. In a lock-up torque converter:

a torque converter assembly including an output shaft, a hub receiving said output shaft to provide a driving connection, a turbine runner with an outer shell drivingly connected to said hub;

a generally annular clutch piston slideably mounted on said hub;

a damper operatively connected between said clutch piston and said hub to provide a driving connection, said damper including a portion secured to said hub;

said damper including a sleeve and a flange radially extending from said sleeve;

said damper also including a plate assembly including a pair of plates disposed on opposite sides of said flange and spaced therefrom;

said flange and said plates having a plurality of openings;

said damper including a spring disposed in each of said openings;

said flange having a plurality of second openings;

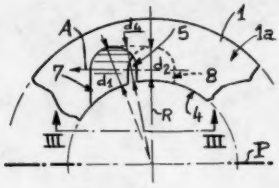
said damper including a plurality of torque transmitting fasteners providing a driving connection between said plates, one of said fasteners extending through each of said second openings of said flange to act as a limit stop between said flange and said plates; and

each of said fasteners having a portion extending into said hub to provide a driving connection between said plate assembly and said hub.

4,266,642
FREE WHEELS

Alfred B. Mazzorana, Venissieux, France, assignor to Societe de Paris et du Rhone, Lyons, France

PCT No. PCT/FR78/00012, § 371 Date Mar. 15, 1979, § 102(e) Date Mar. 15, 1979, PCT Pub. No. WO/00052, PCT Pub. Date Feb. 8, 1979.
This PCT application filed Mar. 15, 1979, Ser. No. 23,197
Claims priority, application France, Jul. 20, 1977, 77 22836
Int. Cl.³ F16D *15/00*
U.S. Cl. 192—45 2 Claims

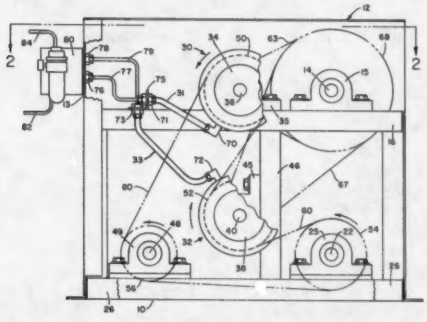


1. An improved unidirectional drive device of the type including a shaft having an axis, a cage having a central bore receiving the shaft with close clearance, and multiple balls riding on the surface of the shaft and operative to wedge and couple the shaft and cage in one direction of relative rotation and to free the coupling in the other direction, the improvement wherein the cage includes for each ball a groove extending substantially lengthwise through the cage and having a semicylindrical wall portion opening into the central bore along straight wall portions, the semicyindrical wall portion having a geometric axis intersecting at one end of the cage a radial drawn through the shaft axis at a point spaced by less than the radius of a ball from the shaft surface, and the geometric axis of the semicylindrical wall portion lying parallel to a plane which includes the axis of the shaft and is disposed normal to said radial; and the geometric axes of all of the grooves being skewed in the same direction out of parallel relationship with the shaft and disposed so that each geometric axis is closer to the shaft surface at said one end than at the other end of the cage.

4,266,643
REVERSING TRANSMISSION

John H. Stradling, Jeffersonville, and Paul R. Albrecht, Lansdale, both of Pa., assignors to J. H. Stradling, Inc., Bridgeport, Pa.

Filed Mar. 20, 1979, Ser. No. 22,471
Int. Cl.³ F16D *11/06*
U.S. Cl. 192—51 4 Claims

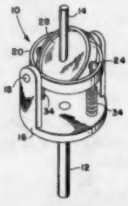


1. A reversing transmission comprising:
a rotating transmission input member,
an output shaft mounted for rotation in either direction about its axis,
a first clutch means actuatable between an engaged and disengaged position and including a rotatable input drive member,
a second clutch means actuatable between an engaged and a disengaged position and including a rotatable input drive member,
drive means operatively connected between said transmission input member and said input drive members of said first and second clutch means for rotating the same,
first driven means responsive to the actuation of said first clutch means into said engaged position thereof for causing said output shaft to rotate in one direction about its axis,
second driven means responsive to the actuation of said second clutch means into said engaged position thereof for causing said output shaft to rotate in the other direction about its axis,
and pneumatic control means continuously and repeatedly responsive to a first operating condition for causing actuation of said first clutch means into its engaged position and said second clutch means into its disengaged position and continuously and repeatedly responsive to a second operating condition for causing actuation of said second clutch means into its engaged position and said first clutch means into its disengaged position,
said first and second clutch means including pneumatic clutches adapted to be actuated from a disengaged position thereof to an engaged position thereof by the application of air under pressure thereto,
said control means including a control valve for controlling the flow of air to said first and second pneumatic clutches for controlling operation thereof,
said control means including a pressure regulated air supply for supplying air at a desired pressure to said control valve,
said control valve comprising a two-position double air bleed pilot valve,
said control means including a first pneumatically operated limit valve for sensing said first operating condition and a second pneumatically operated limit valve for sensing said second operating condition,
said limit valves being pneumatically connected to said pilot valve for controlling the operation thereof,
said limit valves including contact members actuatable between flow and no flow positions in response to the occurrence of said first and second operating conditions,
and means for positioning said limit valves at various locations along a path of travel to vary the location at which said first and second operating conditions are sensed.

4,266,644
TORQUE LIMITING AND SHOCK ABSORBING COUPLING

Michael Linsay, 4048 Charlton Rd., South Euclid, Ohio 44121

Filed Dec. 26, 1978, Ser. No. 972,679
Int. Cl.³ F16D *7/00, 3/00*
U.S. Cl. 192—56 R 16 Claims



1. A rotary coupling comprising drive and driven members, coupling means interconnecting said members, said coupling means including a pair of gimbal rings secured to one of said members and pivotable on axes at right angles to each other,

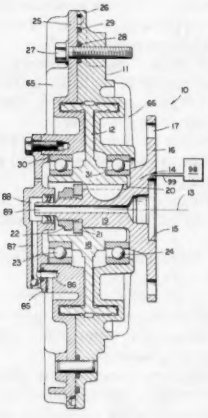
said gimbal rings being arranged to oscillate about their respective pivot axes to permit independent rotation of said members, means secured to the other of said members having a surface inclined to the plane normal to the rotational axis of said other of said members and in confronting sliding engagement with one of said gimbal rings for maintaining said one of said gimbal rings at the same inclination as said inclined surface, and means normally for restraining such oscillation of said gimbal rings for transmitting torque from said drive member to said driven member except that at an overload torque, said gimbal rings are caused to oscillate thus limiting the torque transmitted from said drive member to said driven member.

4,266,645

FLUID SHEAR COUPLING

James W. Crooks, Carmel, Ind., assignor to Wallace-Murray Corporation, Indianapolis, Ind.

Filed May 30, 1978, Ser. No. 910,293
Int. Cl.³ F16D *43/25, 35/00*
U.S. Cl. 192—58 B **24 Claims**



1. A fluid shear coupling which comrpises:
a housing defining a reservoir chamber;
a coupling disc received within said housing, said coupling disc including a disc-shaped body portion and a first flange extending axially from the body portion, the first flange having inside and outside working surfaces, said housing including working portions adjacent each of the working surfaces of the first flange and defining therewith a working chamber, the inside and outside working surfaces of said first flange defining helical grooves, said coupling disc further defining a plurality of apertures adjacent the body portion and communicating between the inside and outside working surfaces of the first flange;
means for mounting said housing and said coupling disc to be rotatable about a common axis; and
pump means for moving a working fluid from the reservoir chamber to the working chamber.

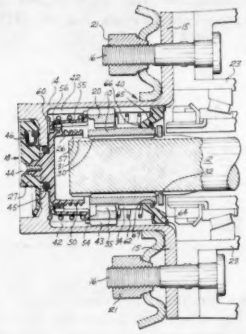
4,266,646

WHEEL STUD MOUNTED LOCKING CLUTCH

Thomas M. Telford, Gladstone, Oreg., assignor to Warn Industries, Inc., Seattle, Wash.

Filed Nov. 6, 1978, Ser. No. 957,736
Int. Cl.³ F16D *1/06;* **B60B** *27/00*
U.S. Cl. 192—67 R **9 Claims**

1. In combination with a conventional downsize wheel and a conventional wheel hub of the type not extending through the pilot hole opening of the wheel when the wheel is bolted thereto, a clutch mechanism locking and unlocking the vehicle wheel to the vehicle axle including a manually operable means for doing same, the improvement wherein said clutch mechanism comprises an outer body extending outwardly through said pilot hole opening, said outer body further having an annular flange at the inward end thereon disposed between said vehicle wheel hub and said vehicle wheel, said flange



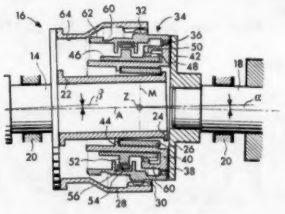
having a plurality of wheel stud openings therein matching the plurality of stud openings in said vehicle wheel, said outer body being securable to said vehicle wheel by the same studs and stud nuts used to secure said vehicle wheel to said vehicle wheel hub such that when the clutch mechanism is locked, the clutch mechanism transfers the vehicle axle torque directly to the vehicle wheel.

4,266,647

AUTOMATICALLY ENGAGEABLE JAW CLUTCH OR THE LIKE

Otto Staedeli, Menzingen, Switzerland, assignor to Maag Gear-Wheel & Machine Co. Ltd., Zürich, Switzerland

Filed Feb. 12, 1979, Ser. No. 11,776
Claims priority, application Switzerland, Feb. 23, 1978, 1961/78
Int. Cl.³ F16D *11/00, 23/02*
U.S. Cl. 192—67 A **7 Claims**



1. An automatically engageable jaw clutch comprising:
a toothed drive hub;
a toothed power take-off hub;
a clutch star axially displaceable with respect to the power take-off hub;
a first gear tooth system provided at the clutch star for continuously connecting for conjoint rotation the clutch star with the drive hub;
a second gear tooth system provided for said clutch star which can be brought into engagement with the teeth of the power take-off hub by axial displacement of the clutch star;
a screw socket;

a pair of coarse-pitch thread means for connecting the screw socket with the power take-off hub;

said screw socket having radial play in relation to the clutch star;

a pawl blocking device composed of pawls and a pawl gear-tooth system;

said screw socket being rotatably entrainable by said clutch star in its direction of rotation through the action of said pawl blocking device;

the thus engaged screw socket carrying out a thread-in movement which entrains the clutch star in axial direction;

a bearing body rigidly connected with the drive hub;

said power take-off hub being mounted with radial play to be rotatable and inclinable at said bearing body;

said radial play being less than the radial play between the screw socket and the clutch star;

said clutch star being provided at an axial spacing from its first gear tooth system with a guide surface which is essentially concentric with respect to the axis of rotation of said clutch star;

one of said two hubs being provided with a guide surface; and

said guide surface of the clutch star, in the disengaged state of the jaw clutch, being centered at said guide surface of said one hub and in the engaged state being spaced from said guide surface of said one hub.

4,266,648

HYDRAULICALLY ACTUATED FRICTION CLUTCH, ESPECIALLY LAMELLAE CLUTCH AUTOMATIC TRANSMISSIONS OF MOTOR VEHICLES

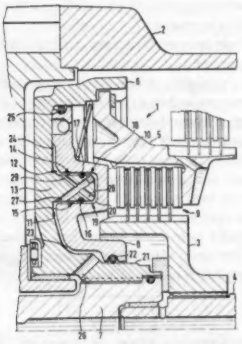
Harry Martin, Neuried, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 30, 1978, Ser. No. 891,627

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1977, 2714500

Int. Cl.³ F16D *25/06*

U.S. Cl. 192—85 AA **10 Claims**



1. A hydraulically activated friction clutch, comprising a cylinder-piston unit with a cylinder having a bottom whose interior space is subdivided into first and second chamber means by means of a ring-like extension provided at the cylinder bottom, and a piston formed with an annular channel means into which said ring-like extension projects, seal means being provided for sealing between said annular channel means and said ring-like extension to form a third chamber means in said annular channel means, and bore means being provided in said ring-like extension for providing hydraulic fluid communication between said first, second and third chamber means.

4,266,649

AUTOMATIC PLAY COMPENSATION DEVICE FOR MOTOR VEHICLE CLUTCHES

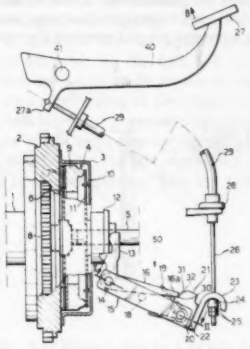
Gianluigi Falzoni, Turin, Italy, assignor to Fiat Auto S.p.A., Turin, Italy

Filed Apr. 4, 1979, Ser. No. 26,963

Claims priority, application Italy, Apr. 12, 1978, 67808 A/78

Int. Cl.³ F16D *13/75*

U.S. Cl. 192—111 A **4 Claims**



1. Automatic play compensating device for a motor vehicle clutch including:

a clutch control lever which effects a working stroke upon the application of a clutch-disengaging force thereto;

means for transmitting said force;

a fork operable by said control lever through said means, and

a clutch release sleeve engaged by said fork;

wherein said play compensating device comprises in combination:

a coupling lever attached at one end to said fork;

means supporting said coupling lever for pivotal movement about a pivot axis at said one end;

an arm rotatable about said axis relative to said coupling lever;

fixed stop means for limiting the rotation of said arm between successive working strokes of said clutch control lever;

a locking element operably connected to said clutch control lever;

pivot means for pivotally connecting said locking element on the other end of said coupling lever in adjustable engagement with said arm during a working stroke of said clutch control lever;

said locking element being disposable in different angular positions relative to said coupling lever dependent upon the displacement of said coupling lever which corresponds to clutch wear; and

resilient means adapted to urge said arm into engagement with said locking element.

4,266,650

COUPLING HINGE FOR TWO CONVEYORS

Ravin J. Patel, Parma, and John Petro, Cleveland, both of Ohio, assignors to Bliss & Laughlin Industries Incorporated, Oak Brook, Ill.

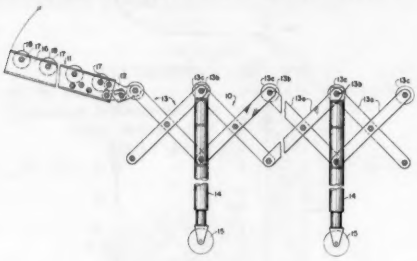
Filed Nov. 26, 1979, Ser. No. 97,416

Int. Cl.³ B65G *13/00*

U.S. Cl. 193—35 TE **2 Claims**

1. A plurality of novel hinge structures to connect two longitudinally extending conveyors for movement between a first position with said conveyors generally substantially in line and a second position with one of said conveyors folded parallel to and on top of the other conveyor, each of said hinge

structures comprising a flat coupling hinge leaf generally triangular in shape and having acute apexes respectively one at each end of a longer upper edge and one obtuse apex at approximately the center of the lower edge about midway between said two acute apexes, each of said hinge structures also including a control link approximately one-half the length of said longer upper edge of said hinge leaf, said two longitudinally extending conveyors including respectively a basic conveyor and an extension conveyor, each of said hinge leaves having pivotal openings for connection of said acute apexes respectively to said basic and extension conveyors, each of said hinge leaves having a control pivotal opening for connection of said



obtuse apex to one end of said control link, said control link having a pivotal connection at one end with said hinge leaf at said control pivotal opening and having at its other end a pivotal opening for connection to said extension conveyor, and there being a control slot opening through the central portion of said hinge leaf receiving one end of said control link, said slot having a transmission passageway generally tangential to said pivotal opening for connection to said basic conveyor and said slot having two fork-like passageways communicating with the same side of said transmission passageway and extending generally away from said pivotal opening for connection to said basic conveyor.

4,266,651

TRANSPORT DEVICE

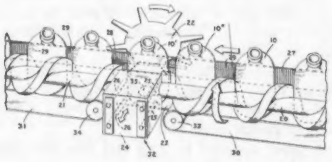
Holger Ström, Lysekil, Sweden, assignor to Platmanufaktur Aktiebolaget, Malmo, Sweden

Filed Nov. 7, 1978, Ser. No. 958,425

Claims priority, application Sweden, Nov. 16, 1977, 7712932

Int. Cl.³ B65G *47/00*

U.S. Cl. 198—345 **12 Claims**



1. Apparatus for moving containers, such as bottles, to and from a position in which each container is fixed at least during a predetermined interval of time, said apparatus comprising a feed screw and a discharge screw separated from each other to define a station therebetween at which each container is periodically halted, a stop cooperating with said feed screw and discharge screw for guiding each container respectively into and from said station, rotatable sprocket means at said station having adjacent teeth between which the containers are successively received from the feed screw and fed to the discharge screw, said sprocket means being freely rotatable and undergoing movement under the action of contact of the successive containers fed by the feed screw with the teeth of said sprocket means, each container being fed by said feed screw towards said station to engage one of the teeth of the sprocket means and cause the sprocket means to rotate freely as the container is transported to said station between the feed screw and the discharge screw, the previous container at said station being concurrently advanced by the rotation of the sprocket means to said discharge screw and means for engaging the container at said station to press the container against the sprocket means to halt the container and thereby the sprocket means until the next successive container contacts a tooth of the sprocket means and rotates the sprocket means anew.

4,266,652

APPARATUS FOR CONVEYING ARTICLES

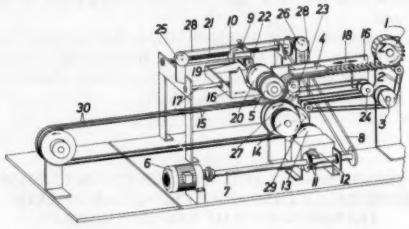
Hubert Bald, Gevelsberg, Fed. Rep. of Germany, assignor to Maschinenfabrik Alfred Schmermund GmbH & Co., Gevelsberg, Fed. Rep. of Germany

Filed Nov. 9, 1979, Ser. No. 92,879

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1978, 2848773

Int. Cl.³ B65G *1/04*

U.S. Cl. 198—347 **5 Claims**



1. An apparatus for conveying articles and for temporarily storing said articles between a machine for continuously feeding said articles to said apparatus and a removal device for periodically removing said articles from said apparatus, said apparatus comprising:

(a) feeder means to receive and accumulate articles coming from said machine,

(b) transfer conveyor means to receive accumulated articles from said feeder means,

(c) grooved belt means to receive articles from said transfer conveyor means,

(d) common regulable drive means to rotate said transfer conveyor means and to drive said grooved belt means, and

(e) gear means disposed between said common drive means and said grooved belt means and operable to have a periodically changing gear ratio to oscillate said transfer conveyor means along said grooved belt means and to drive said grooved belt means at a varying conveying speed, whereby in operation—at a given instant—said oscillation of said transfer conveyor means has a speed equal to any difference between said speed of said grooved belt means and the peripheral speed of said transfer conveyor means.

4,266,653

STOPPERING MACHINE

Vernon F. Mergl, Timonium, Md., assignor to National Instrument Company, Inc., Baltimore, Md.

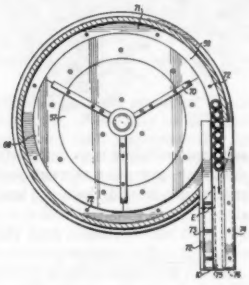
Filed Jun. 1, 1978, Ser. No. 911,312

Int. Cl.³ B65G *47/24, 29/02*

U.S. Cl. 198—392 **9 Claims**

1. In a stoppering machine for applying stoppers having a relatively wide flanged top portion and a relatively narrow bottom portion to the openings in containers such as bottles wherein means are provided for holding a supply of said stoppers and for selectively arranging and feeding the stoppers to a stopper inserting means where the stoppers are inserted into the openings of containers, the improvement comprising an

inclined rotatable member which contacts said supply of stoppers, said rotatable member having supporting means thereon for supporting stoppers during rotation of said member such that stoppers are raised to where those stoppers not properly arranged in said supporting means for feeding to the stopper inserting means fall from said supporting means under the effect of gravity, said supporting means including an annular recess in said inclined rotatable member for supporting stoppers, and wherein cover means are provided over a substantial portion of said annular recess, said cover means extending radially inwardly to completely cover said annular recess and



being positioned above said annular recess a predetermined distance such that stoppers which are wider than they are long can only enter said annular recess right side up or upside down, a portion of said annular recess at the top of the inclined rotatable member not being covered by said cover means and said annular recess being shaped such that stoppers supported in said annular recess with their top sides down remain in said annular recess as they are raised with the rotation of said inclined rotatable member while stoppers positioned otherwise in said annular recess fall from said annular recess at the uncovered top portion of the inclined rotatable member under the effect of gravity.

4,266,654

METHOD AND APPARATUS FOR SEPARATING GROUPS OF WORKPIECES BEING CONVEYED IN SUPERPOSED OVERLAPPING FORMATION

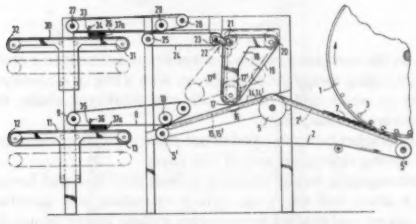
Fritz Achelpohl; Richard Feldkäper, and Friedrich Blom, all of Lengerich, Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Jun. 29, 1979, Ser. No. 53,333

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1978, 2832660

Int. Cl.³ B65G *47/26*

U.S. Cl. 198—425 **16 Claims**



1. A method of separating groups of workpieces from workpieces being conveyed in a first direction in superposed overlapping formation by a first belt conveyor, wherein the first workpieces of the following group are held on the first belt conveyor and the last workpieces of the preceding group are held on a second belt conveyor adjoining the first and are pulled apart by the belt conveyors by at least one length of overlap of the workpieces, characterised in that, for the purpose of deflecting the workpieces into a second conveying direction differing from the first conveying direction, the first workpiece of the group to be deflected is suction attracted by the second belt conveyor at its exposed leading edge while the last workpiece of the preceding group is suction attracted on the first belt conveyor at its trailing edge which projects beyond the second from the last workpiece, and that, for the purpose of returning the overlapping flow to the first conveying direction, at least the first workpiece of the following group is suction attracted by the first belt conveyor at its trailing edge, that the second belt conveyor suction attracts only the workpieces belonging to the group being deflected and the second belt conveyor is moved along with the first belt conveyor at least at the same conveying speed as same while being lifted thereoff, until the last workpiece of the group being deflected has been pulled out from the following group.

4,266,655

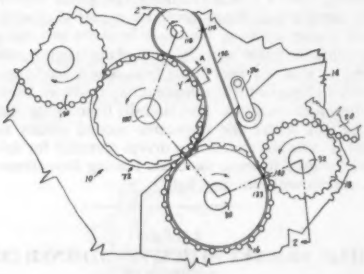
APPARATUS FOR PHASING AND TRANSFERRING ROD-SHAPED ARTICLES

Leslie E. Payne, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Dec. 18, 1978, Ser. No. 970,424

Int. Cl.³ B65G *37/00, 29/00*

U.S. Cl. 198—461 **6 Claims**



1. Apparatus for phasing and transferring rod-shaped articles between independently drive first and second non-synchronous conveying drums, comprising:

(a) transfer drum means for receiving the articles from the first conveying drum, said transfer drum being synchronized with the first conveying drum and operating at speeds variable from zero to a specified maximum;

(b) phasing drum means contiguous to said transfer drum, said phasing drum being synchronized with the second conveying drum and rotating at a constant peripheral speed which is greater than the maximum speed of said transfer drum;

(c) seat means located on said phasing drum, having areas in which to capture and retain the rod-shaped articles; and

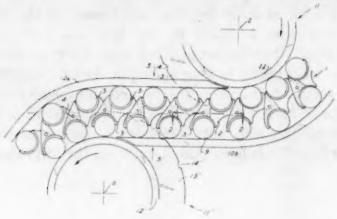
(d) means for capturing and transferring the rod-shaped articles, said transfer means including driven belt means moveably mounted adjacent to said transfer and phasing drum for moving the articles off of said transfer drum, capturing the articles on said phasing drum, and urging the articles into said seats.

4,266,656

ENDLESS CHAIN FOR INSTALLATIONS TREATING CONTINUOUSLY MOVING ARTICLES

Jacques R. Richard, Cachan, France, assignor to Manufacture de Machines du Haut-Rhin S.A., Mulhouse-Cedex, France

Filed Sep. 29, 1978, Ser. No. 947,264
Claims priority, application France, Sep. 30, 1977, 77 29500
Int. Cl.³ B65G *17/18*
U.S. Cl. 198—655 **5 Claims**



1. In an installation wherein an endless chain formed of a plurality of article-transporting links is continuously driven in succession in a horizontal plane partially about a plurality of drums at which operations are performed on the articles, the improvement which comprises means for pivotally connecting successive links comprising pivot pins having axes parallel to each other, whereby the chain can bend horizontally in a plane perpendicular to the axes of the pivot pins, each link having two cavities therein which are laterally outwardly open, said cavities being mirror images of each other, each cavity receiving an article to be operated upon, said two cavities having such shape that articles can be introduced thereinto and removed therefrom laterally only in a direction perpendicular to the axes of the pivot pins of each link which join it to the adjoining links, a first, fixed horizontal guide supporting the chain along which the chain slides, a pair of spaced parallel second guides spanning the space between successive drums for guiding the chain laterally, each of the second guides cooperating with the cavities in the links which are laterally open toward it to prevent the introduction of articles laterally into and the withdrawal of articles laterally from the cavities except at locations where the respective second guides are interrupted, and means including a driven sprocket for driving the chain, the links forming the chain bearing formations thereon which mesh with the sprocket.

4,266,657

CHAIN BRACKET WITH STRENGTHENED CHAIN SUPPORTS

Charles C. Frost; Gerald W. Gurney, both of Ada, and Frederick R. Sytsma, Grand Rapids, all of Mich., assignors to C. L. Frost & Son, Inc., Grand Rapids, Mich.

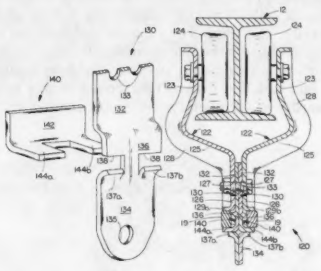
Continuation-in-part of Ser. No. 872,245, Jan. 25, 1978, Pat. No. 4,210,238. This application Jan. 17, 1979, Ser. No. 3,963
Int. Cl.³ B65G *17/30, 17/20*
U.S. Cl. 198—687 **11 Claims**

1. In a chain bracket assembly for attachment to a chain for use in overhead conveyors comprising a chain bracket, engaging means for engagement with a link of a conveyor chain to move said bracket assembly with said conveyor chain, and a bracket attachment engaged with said chain bracket, the improvement comprising:

said engaging means including at least one chain pad on one of said chain bracket and bracket attachment extending generally transverse and across and outwardly of said chain bracket;

the other of said chain bracket and bracket attachment including reinforcment means extending into abutment with said chain pad for supporting said chain pad and preventing its movement under load;

said chain bracket including a recess for receiving at least a first portion of said bracket attachment and retaining said bracket attachment to said chain bracket, and at least one aperture through said bracket;



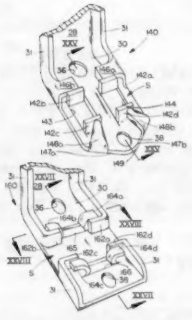
said bracket attachment including a second portion formed in one piece therewith, extending through said aperture, and forming at least one of said chain pad and said reinforcing means.

4,266,658

CHAIN BRACKET WITH STRENGTHENED CHAIN SUPPORTS

Charles C. Frost, Ada, and Siegfried K. Weis, Byron Center, both of Mich., assignors to C. L. Frost & Son, Inc., Grand Rapids, Mich.

Continuation-in-part of Ser. No. 872,244, Jan. 25, 1978, Pat. No. 4,220,243. This application Jan. 17, 1979, Ser. No. 3,964
Int. Cl.³ B65G *17/30, 17/20*
U.S. Cl. 198—687 **16 Claims**



1. In the combination of a bracket for attachment to a chain and engaging means for engagement with a link of a conveyor chain to move said bracket with said conveyor chain, the improvement comprising:

said bracket being stamped in one piece from sheet metal and having side edges and an end edge;

said engaging means including at least one chain pad having a chain link engaging surface extending in a direction across said bracket for engaging a chain link to secure the link to said bracket;

reinforcing means for supporting said chain pad opposite said chain link engaging surface of said chain pad for resisting bending of said chain pad when under load;

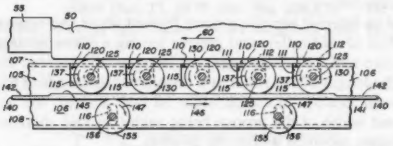
said reinforcing means including a reinforcing flange connected to and extending from said end edge of said bracket into abutment with said chain pad.

4,266,659

ACCUMULATING ROLLER CONVEYOR

Louis H. Meyer, Prospect, and Ellsworth H. Collins, Louisville, both of Ky., assignors to Interlake, Inc., Oak Brook, Ill.

Filed Apr. 16, 1979, Ser. No. 30,160
Int. Cl.³ B65G *13/06*
U.S. Cl. 198—781 **30 Claims**



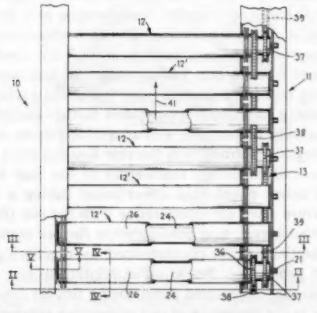
1. An accumulating roller conveyor for conveying articles comprising a frame, a plurality of conveyor rollers, means rotatably supporting each conveyor roller on said frame with the axis of each conveyor roller extending transversely of said frame and movable upwardly and rearwardly with respect to the direction of travel of the articles conveyed thereby, each of said conveyor rollers normally being positioned downwardly and forwardly with respect to said frame, means for frictionally engaging said conveyor rollers for driving said conveyor rollers to convey articles supported thereon, when the movement of an article along said conveyor rollers is stopped the contacted conveyor rollers move upwardly and rearwardly substantially to reduce the frictional engagement between said driving means and said conveyor rollers contacting the stopped article, and one-way clutch mechanism holding out of contact with said driving means the conveyor rollers in contact with a stopped article in the upward and rearward positions thereof so long as the contacted article is stopped by preventing said rotatable support means from rotating relative to said stopped conveyor rollers, forward movement of the stopped article permitting the contacting conveyor rollers to return to the downward and forward conveying positions thereof in full frictional engagement with said driving means.

4,266,660

ACCUMULATING-TYPE POWERED ROLLER CONVEYOR

Donald G. Herman, Indianapolis, Ind., assignor to Smock Material Handling Company, Inc., Indianapolis, Ind.

Filed Aug. 2, 1979, Ser. No. 63,045
Int. Cl.³ B65G *13/06*
U.S. Cl. 198—781 **7 Claims**



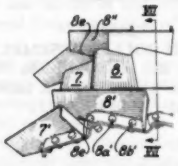
1. In a powered roller conveyor for both transporting and accumulating heavy articles, said conveyor including a frame, a plurality of roller units supported on said frame for defining a transport path for said articles, said roller unit including an elongated metal support shaft and a single axially elongated sleevelike metal conveyor ring freely rotatably supported on said shaft in surrounding relationship thereto, said conveyor ring having an inside diameter which is slightly greater than the outer diameter of said shaft so that said ring is eccentrically supported on said shaft, said ring having an inner annular surface which is normally in rolling engagement with the outer annular surface of said shaft and is frictionally driven by and slidable upon said shaft, and drive means drivingly interconnected to the shafts associated with at least some of said roller units for rotatably driving said shafts to thereby effect frictional rotational driving of the respective conveyor rings, comprising the improvement wherein the inner annular surface of said ring and the outer annular surface of said shaft are coated with manganese/nickel phosphate which integrally bonds to the metal of the shaft and conveyor ring to substantially reduce the frictional driving force imposed on the conveyor ring, whereby stoppage of an article on said conveyor causes stoppage of the conveyor ring as permitted by slippage between the ring and its respective shaft while resulting in minimum drive force being transmitted to the stopped article, wherein the inner and outer surfaces, as coated with said manganese/nickel phosphate, are also provided with a coating of a flowable lubricant, wherein the drive means continuously and positively rotatably drives the shafts of the driven roller units in a nonslip manner through drive connection mechanisms which are free of clutches or other drive-disrupting devices, and wherein said drive means is drivingly connected to only selected roller units which are disposed at preselected and uniformly spaced intervals along the conveyor, each said pair of adjacent driven roller units being spaced apart by at least one intermediate roller unit which is not driven, said intermediate and driven roller units both being of substantially identical construction and employing a said conveyor ring eccentrically surrounding a said support shaft.

4,266,661

CONVEYOR BELT ARRANGEMENT HAVING AN ENDLESS PATH

Curt E. Andersson, Björkhagen, Toltorp, 641 00 Katrineholm, Sweden

Filed Sep. 12, 1979, Ser. No. 74,781
Claims priority, application Sweden, Sep. 15, 1978, 7809708
Int. Cl.³ B65G *17/10*
U.S. Cl. 198—822 **9 Claims**



1. A conveyor belt arrangement having a plurality of link members whose mutually opposite end parts are pivotally connected to the respective end parts of mutually adjacent link members, said link members together forming an endless path normally guided by a drive wheel and a guide wheel, said conveyor belt arrangement comprising:

first wheel means for driving said endless path, and second wheel means for guiding said endless path, at least one of said first and second wheel means having a plurality of support surfaces, said support surfaces being separated from each other by a first distance;

first and second mechanical holding means for pivotally connecting and holding mutually adjacent link members of said conveyor arrangement; and

first and second link members, said first and second link members forming at least a portion of said endless path, and each of said first and second link members including: a first end part having a convex outer surface, said convex

outer surface having a part-cylindrical configuration, said part-cylindrical configuration having a longitudinal axis forming a first pivot axis of said link member;

a second end part having a concave internal surface, said concave internal surface having a part-cylindrical configuration, said part-cylindrical configuration having a longitudinal axis forming a second pivot axis of said link member;

a first side region including a first side portion of said first end part and including a first side portion of said second end part; and

a second side region including a second side portion of said first end part and including a second side portion of said second end part;

wherein said convex outer surface and said concave internal surface are separated from each other by said first distance; and

wherein said first and second side regions include first, second, third and fourth receiving means for accommodating at least one of said first and second mechanical holding means, said first side portion of said first end part including said first receiving means; said second side portion of said first end part including said second receiving means; said first side portion of said second end part including said third receiving means; and said second side portion of said second end part including said fourth receiving means;

wherein said first and second link members are arranged with respect to each other such that the convex outer surface of said second link member is disposed beneath said concave internal surface of said first link member;

wherein said first mechanical holding means for pivotally connecting and holding mutually adjacent link members is accommodated by said first receiving means of said second link member and by said third receiving means of said first link member; and further wherein said second mechanical holding means for pivotally connecting and holding mutually adjacent link members is accommodated by said second receiving means of said second link member and by said fourth receiving means of said first link member; and

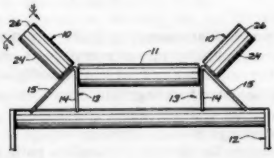
wherein said plurality of support surfaces included on said at least one of said first and second wheel means cooperates with the region of the part-cylindrical configuration of the first end part of said second link member located between said first and said second receiving means.

4,266,662

TROUGH ROLLER ASSEMBLY

Rod B. Reid, 2616 Sky Dr., Missoula, Mont. 59801

Filed Mar. 2, 1979, Ser. No. 16,901
Int. Cl.³ B65G *39/12*
U.S. Cl. 198—829 **12 Claims**



1. A roller assembly, comprising:

a supporting bracket;

a cantilevered support having an inner end fixed to said bracket and having an outer end spaced therefrom, said support having a stationary cylindrical outside surface generated about a central axis;

a radial shoulder on said support projecting beyond the outside surface thereof;

a tubular cylindrical roller coaxially mounted about said support and having coaxial inner and outer surfaces, the inner surface of said roller being in slidable engagement with the outside surface of said support;

a transverse cap in axial abutment with the outer end of said support and enclosing one end of the roller;

said roller inner surface being open at the remaining end of the roller and having an inside diameter complementary to the diameter of the cylindrical outside surface of said support;

and an internal annular groove formed about the inner surface of said roller, said groove having a diameter greater than said inside diameter and being axially located along the length of the roller at a position corresponding to the axial location of the shoulder on said support, the depth and width of the groove being such that said shoulder is freely received within the groove;

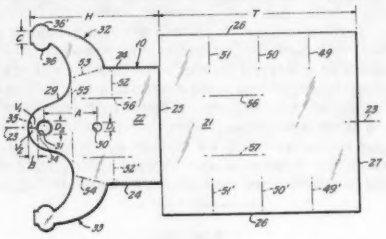
said shoulder and the cylindrical outside surface of said support being discontinued along a first plane forming an acute angle with respect to said central axis.

4,266,663

SURGICAL DRAPE FOR AN OPERATING MICROSCOPE

James L. Geraci, Cincinnati, Ohio, assignor to Carl Zeiss, Inc., New York, N.Y.

Filed Nov. 13, 1979, Ser. No. 93,178
Int. Cl.³ B65D *85/38, 65/04, 65/28;* G02B *27/00*
U.S. Cl. 206—223 **24 Claims**



1. A disposable surgical drape for an operating microscope (a) having a binocular microscope head unit with two barrel-mounted viewing oculars and a barrel-mounted objective lens and (b) support structure including an elongate horizontal arm for cantilevered positioning of said head unit, said drape comprising connected upper and lower continuous panels of thin pliant elastomeric plastic sheet material, said panels having registering generally rectangular configuration at a head-unit adaptable region and being connected to each other along both lateral limiting edges of said configuration, such connection extending from front to rear limiting edges of said configuration and along said front limiting edge but to the exclusion of said rear limiting edge, said upper panel further including an elongate generally rectangular arm-adaptable region continuously and integrally formed with the rear limiting edge of said configuration and extending rearwardly of the rear limiting edge of said lower panel, said lower panel having a central circular aperture sized for interference with the rim diameter of the objective barrel, said configuration further comprising an ocular-adapting region characterized by registering apertures in both panels near but in offset relation to one of said connected limiting edges, said panels being further connected to each other at the perimeter of said registering apertures, and said panels being perforated along an alignment from said registering apertures to a near region of said one connected limiting edge, for ready simultaneous local separation of both panels at the perforation alignment, whereby upon severance at the perforation alignment, two spaced and now-openble tubular formations are immediately presented for direct sepa-

rately protective manipulated assembly over the two binocular-viewing ocular barrels of the microscope.

4,266,664

PACKAGING FOR SAFETY RAZORS

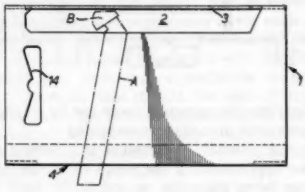
Roy P. Dixon, 96 Clarence Ave., New Malden, Surrey, England, and John F. Kelly, 6 Thurnby Ct., Wellesley Rd., Twickenham, Middlesex, England

Filed Dec. 17, 1979, Ser. No. 104,678

Claims priority, application United Kingdom, Dec. 19, 1978, 49148/78

Int. Cl.[3] **A45D** *27/29*

U.S. Cl. 206—349 **6 Claims**



1. A package for a plurality of razors each having an elongate handle and a transversely extending shaving head at the upper end thereof, the package being formed from card which is cut, shaped and secured to form an envelope enclosing at least the major portion of the lengths of the razor handles, the opposite sides of the envelopes each being formed with an elongate slot, the two said slots being in registry with each other to permit the shaving heads of the razors to project from each side of the envelope, and a pair of flaps integral with the remainder of the package overlying the projecting heads to each side of the envelope.

4,266,665

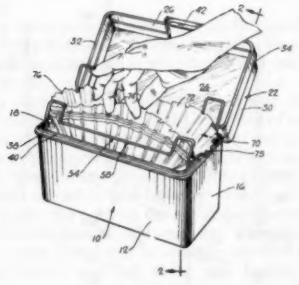
DISPENSER FOR CUP-SHAPED FILTERS

John R. Nelson, Palatine, Ill., assignor to Research, Development & Marketing, Inc., Palatine, Ill.

Filed Nov. 13, 1979, Ser. No. 93,185

Int. Cl.[3] **B65D** *85/62, 83/04*

U.S. Cl. 206—445 **4 Claims**



1. A device for storing and facilitating retrieval of stacked paper cups such as filters used in coffeemakers comprising, in combination:

a container having a lower portion with a bottom, and walls extending from the bottom to form an open top, and a cover which mates with the lower portion, the cover having a perimitral portion mounted in hinged relationship on a confronting portion of the lower portion and forming with the lower portion a substantially closed container,

a platform having a cross section smaller than the bottom of the container,

yieldable resilient means mounted on the lower portion of the container and the platform for mounting the platform in spaced apart relationship with the base of the container,

and a basket adapted to hold a stack of cups mounted on the platform, said basket having a post extending away from the platform adjacent to the perimitral portion of the cover, said post extending from the platform a distance greater than the distance between the platform and the top of the lower portion of the container and less than the distance between the bottom of the lower portion of the container and the cover.

4,266,666

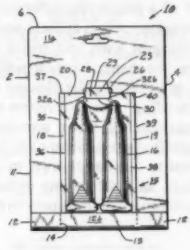
BLISTER PACKAGE

Morris W. Kuchenbecker, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Dec. 21, 1979, Ser. No. 105,898

Int. Cl.[3] **B65D** *83/00, 85/14, 75/58*

U.S. Cl. 206—461 **12 Claims**



1. A recloseable hinged blister card package, comprising:

(a) a paperboard card having a front surface and a back surface; top and side edges, and means for securing blister tab means to keep the package in closed position;

(b) a plastic blister having a raised product holding portion having top, bottom and side edges, and a peripheral flange at the sides and bottom of said product holding portion, said peripheral flange being secured to the front surface of the card;

(c) opening tab means on said plastic blister cooperating with said means on the card for securing the tab means to keep the package in closed position and for reclosing the package after opening;

(d) cut score lines in the front surface of said card and extending partially through the thickness of said card along the inner and outer edges of the side and bottom portions of said peripheral flange;

(e) a bottom panel fold over extension formed integral with said paperboard card and having spaced lines of weakness extending vertically from the bottom edge of said card to the top end of said extension, said extension being folded upwardly and secured to the underlying paperboard in areas outside said lines of weakness and being secured only to the blister flange bottom portion in areas inside the lines of weakness,

whereby said blister may be lifted by said opening tab means with confined ply separation of the paperboard card at the portions thereof that are secured to said peripheral flange without breaking the bond between said blister flange and the front surface of the paperboard card and whereby said blister can be swung open about a hinge line defined by the bottom edge of the card without breaking the bond between the peripheral flange and the fold over extension.

4,266,667

PACKAGE OF MECHANICAL PENCIL REFILL LEADS

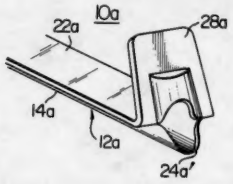
Kazumi Ishigaki, Hirakata, Japan, assignor to Sakura Color Products Corporation, Osaka, Japan

Filed Sep. 19, 1979, Ser. No. 77,121

Claims priority, application Japan, Oct. 23, 1978, 53-146242[U]; Dec. 28, 1978, 53-179765[U]; Dec. 29, 1978, 53-180666[U]; Dec. 29, 1978, 53-180667[U]; Feb. 24, 1979, 54-23219[U]

Int. Cl.³ B65D *83/02, 85/20*

U.S. Cl. 206—469 6 Claims



1. A package of mechanical pencil refill leads, comprising a container formed of a plastically deformable first sheet material having an elongated recess therein and a substantially flat marginal flange integral with said recess and extending outwardly therefrom, mechanical pencil refill leads disposed in said recess, and a substantially flat closure member of a second sheet material extending over said recess to close said recess, said second sheet material being secured to said marginal flange, wherein said first sheet material includes a slit formed in said recess adjacent to one end thereof to facilitate easy opening of said package, said slit having at least a portion of its length extending obliquely with respect to the longitudinal axis of said recess.

4,266,668

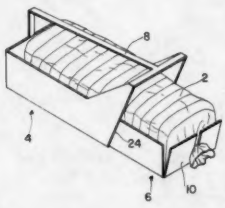
TELESCOPING SLICED BREAD DISPENSER

Yong K. Paek, 9014 Fort Craig Dr., Burke, Va. 22015

Filed Jun. 27, 1979, Ser. No. 52,602

Int. Cl.³ B65D *1/34, 6/04*

U.S. Cl. 206—557 16 Claims



1. A telescoping dispensing tray for holding the end of a twisted plastic wrapper comprising:

(a) a first tray portion having a bottom, two sides, an end connected to said two sides and bottom and an open end;

(b) a handle connected to said first tray portion;

(c) a second tray portion having a second tray bottom, two second tray sides connected to said second tray bottom and a second tray end hinged to said second tray bottom;

(d) said hinged second tray end having means for securing and sealing said end of a twisted plastic wrapper comprising a perforation located in said hinged second tray end and a slot connecting said perforations and an edge of said hinged second tray end; and

(e) said first tray portion having means for guiding said second tray portion into telescoping relationship.

4,266,669

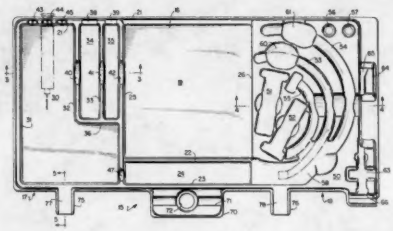
ANESTHESIOLOGISTS INSTRUMENT TRAY

Robert L. Watson, 14312 Piccadilly Rd., Silver Spring, Md. 20906

Filed Nov. 28, 1979, Ser. No. 98,172

Int. Cl.³ B65D *1/36, 85/00;* A61B *15/00*

U.S. Cl. 206—564 6 Claims



1. An apparatus for operating room use by an anesthesiologist during surgical procedures comprising

an elongated generally rectangular tray having a long dimension approximating the width of an operating table, said tray being placeable on and at the head end of an operating table;

wall means extending transversely of said long dimension and forming a part of said tray for dividing said tray into three major portions including

a central portion for receiving the head of a patient placed on the operating table, and

first and second end portions,

at least one of said end portions having

a plurality of interior wall means for separating said end portion into a plurality of upwardly opening recesses and compartments having predetermined shapes for receiving specified instruments.

4,266,670

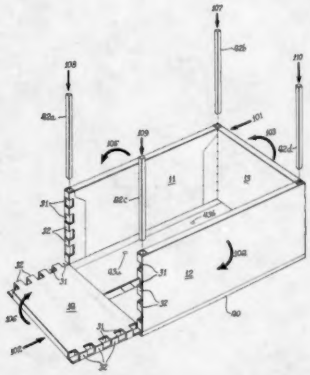
COLLAPSIBLE REINFORCED CONTAINER

Laurie G. Mykleby, Palos Park, Ill., assignor to First National Packaging Co., Inc., Palos Park, Ill.

Filed Jul. 20, 1979, Ser. No. 59,239

Int. Cl.³ B65D *5/36, 19/06, 6/34*

U.S. Cl. 206—600 9 Claims



1. A collapsible, reinforced, four sided container attached to a rigid base comprising: a first and second side wall comprising a first pair of opposed reinforced rectangular side walls having an inner and outer face with reinforcing therebetween, each of said side walls being hingedly connected to a bottom flap along

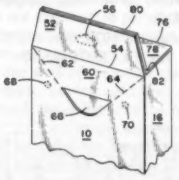
the bottom of said reinforced side wall, the bottom flap connected to said first side wall having an additional fold score parallel to and spaced from said hinge connection and the bottom flap connected to said second side wall having a fold score parallel to and spaced from said hinge connection; a third and fourth side wall comprising a second pair of opposed reinforced rectangular side walls having an inner and outer face with reinforcing therebetween, each of said side walls being hingedly connected to a separate bottom flap, each of said separate bottom flaps having a fold score parallel to and spaced from said hinge connection of each of said third and fourth side walls, the spacing of said fold scores providing overlaying of the sides to collapse the side walls flatly; each of said first pair of reinforced side walls having fastening means along each edge adjacent and at right angle to said hinge connection and each of said second pair of reinforced side walls having a mating fastening means along each edge adjacent and at a right angle to said hinge connection, said fastening means and mating means engageable with each other when the reinforced side walls are perpendicular to said bottom flaps; and the bottom flaps of said first pair of opposed side walls attached to a rigid base inwardly from the sides enclosed by said second pair of side walls, the bottom flap of said second pair of side walls slidable between the bottom flaps of the first opposed sides and the rigid base.

4,266,671

CARTON HANGER-OPENER

Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Aug. 8, 1979, Ser. No. 64,881
Int. Cl.³ B65D *5/54*
U.S. Cl. 206—626 **2 Claims**



1. In a carton of rectangular cross-section having first and second side wall panels, first and second end wall panels and top and bottom closure panels, an improved top closure panel comprising:

a. a hang tab extending upwardly from the top of one of said side wall panels, said tab being integrally formed with and hingedly attached to the top edge of said one of said side wall panels,

b. a top cover panel integrally formed with and hingedly attached to the top edge of the other one of said side wall panels and extending across the top of said carton,

c. a tear strip integrally formed in, removably attached along all its sides but one to, and hingedly attached along said one side thereof to said top edge of said one of said side wall panels for opening the top of said carton to remove the contents thereof, said tear strip, when detached from said carton along said removably attached sides, being folded under said tab about said hinged attachment whereby said tab may be folded downwardly and tucked in said open carton top to reclose said carton,

d. said carton further including means for removably attaching said hang tab to said one side wall panel of said carton when said hang tab is folded downwardly about said hinged attachment,

e. said means for removably attaching said hang tab to said one side wall panel of said carton including:

i. at least one integrally formed, detachable panel in said one side wall panel of said carton, and

ii. glue applied to said detachable panel whereby said hang tab adheres to said detachable panel until such time as force is applied to said hang tab thereby removing said detachable panel from said one carton side wall panel with said hang tab and allowing said hang tab to be moved from a position adjacent said one side wall panel to a vertical position.

4,266,672

CATALYTIC CRACKING WITH SEPIOLITE

Robert A. Van Nordstrand, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sep. 26, 1979, Ser. No. 78,853
Int. Cl.³ C10G *11/02, 11/05*
U.S. Cl. 208—120 **8 Claims**

1. A process for cracking a hydrocarbon feed in the adsence of added molecular hydrogen, which comprises:

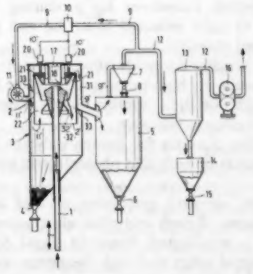
contacting said feed, at catalytic cracking conditions, with a catalyst composition comprising shaped catalytic bodies including (1) dispersed rods of fibrous form sepiolite, and (2) at least one porous refractory inorganic oxide gel, said gel bonding said sepiolite rods together in a rigid substantially random mutual orientation in said catalytic bodies.

4,266,673

APPARATUS FOR CLASSIFYING DUST MATERIALS

Goetz Haidlen, Dietzenbach, and Edmund Groepl, Muehlheim, both of Fed. Rep. of Germany, assignors to Wibau Maschinenfabrik Hartmann AG, Gruendau-Rothenbergen, Fed. Rep. of Germany

Filed Oct. 19, 1979, Ser. No. 86,356
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1978, 2846551; Feb. 17, 1979, 2906206
Int. Cl.³ B07B *7/04*
U.S. Cl. 209—139 R **11 Claims**



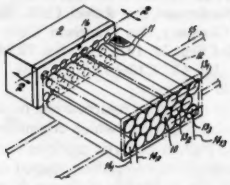
1. An apparatus for separating the particles of powdery materials from one another in a conveying system operating under reduced pressure, comprising first collector housing means **(3)**, partitioning wall means **(33)** operatively secured in said first collector housing means **(1)** for forming upper and lower chambers **(31, 32)** in said first collector housing means, classifier means **(2)** operatively supported on and extending through said partitioning wall means **(33)**, suction pipe means **(1)** extending axially into said classifier means **(2)** for maintaining said reduced pressure, suction fan means **(11)** operatively connected with its pressure port to said first collector housing means **(1)** for producing a separator air stream, ring means **(19)** adjustably arranged in said classifier means **(2)** for forming a ring gap **(21)** of adjustable cross-sectional area, second classifier means **(7)**, connecting pipe means **(9, 9', 9'')** operatively connecting said upper chamber **(31)** through said second classifier means **(7)** to the suction port of said suction fan means **(11)**, further suction means **(16)** operatively connected to said connecting pipe means, and second collector housing means **(5)** operatively connected to said connecting pipe means **(9, 9')** between the first and second classifier means.

4,266,674

OPTOELECTRONIC DEVICE FOR AUTOMATICALLY INSPECTING A GROUP OF CIGARETTES OR THE LIKE

Richard P. Bell; Karl F. Rill, both of Cincinnati, and John C. Butler, Centerville, all of Ohio, assignors to Richard Equipment Company, Inc., Cincinnati, Ohio

Filed Feb. 7, 1979, Ser. No. 10,062
Int. Cl.[3] B07C *5/342*
U.S. Cl. 209—536 21 Claims



1. An optoelectronic apparatus for detecting when a cigarette is missing from a preformed group of cigarettes and when a cigarette in said group is improperly filled, said group normally having a predetermined number of cigarettes arranged in columns and rows, said group being conveyed to a position proximate said apparatus, said apparatus comprising:

a plurality of photodetectors equal in number to said predetermined number, said photodetectors being arranged in columns and rows corresponding to said columns and rows of cigarettes in said group such that there is a one-to-one correspondence between a photodetector and each cigarette in said group;

each said photodetector including a light-emitting source for illuminating the end portion of a cigarette registered with said photodetector when power is applied thereto and a photoelectric transducer for producing a signal in response to light reflected from the end portion of said registered cigarette;

sequence circuitry for modulating power to said light-emitting sources at a high frequency such that light emanating from each said light-emitting source alternately increases and decreases in intensity;

AC-coupling circuitry for passing only the high frequency components of each said photoelectric transducer signal; and

comparison circuitry responsive to said high frequency components of each said photoelectric transducer signal and to a preselected threshold signal for producing a reject signal when said high frequency components of at least one said photoelectric transducer signal are less than said preselected threshold signal;

whereby the effects of varying ambient light on the accuracy with which missing and improperly filled cigarettes are detected is minimized.

4,266,675

OPTICAL WOOD-BARK SEGREGATOR

Robert D. Barwise, Bovey, Minn.; John A. Sturos, Laurium, and Douglas B. Brumm, Calumet, both of Mich., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

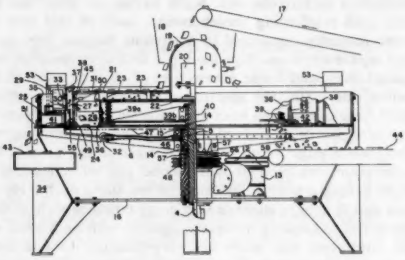
Filed Jan. 4, 1980, Ser. No. 109,590
Int. Cl.[3] B07C *5/342*
U.S. Cl. 209—540 1: Claims

1. A process of separating wood fiber chips from wood-bark fiber chips and bark fiber chips comprising:

a. orienting a mixture of wood chips comprising wood fiber chips, wood-bark fiber chips, and bark fiber chips in a detecting zone between a light source and a light-detecting means;

b. transmitting a beam of light from said light source through the thickness of said wood chips and detecting said beam of light with said light-detecting means;

c. passing said wood chips through a separating zone where said separating zone and said detecting zone constitute a straight path for said wood chips to travel;



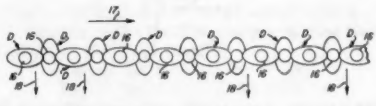
d. separating said wood fiber chips from said wood-bark fiber chips and said bark fiber chips by causing said wood-bark fiber chips and said bark fiber chips to deviate from said straight path in response to the relative amount of light transmitted through said wood chips, the amount of light transmitted through said wood fiber chips being the greatest.

4,266,676

APPARATUS FOR SEPARATION OF MATERIAL OF HETEROGENEOUS CHARACTER

Konrad Ruckstuhl, Littleton; Serafin L. Silvano, and Kurt W. Beier, both of Aurora, all of Colo., assignors to SPM Group, Inc., Englewood, Colo.

Filed May 10, 1979, Ser. No. 37,729
Int. Cl.[3] B07B *13/05*
U.S. Cl. 209—672 22 Claims



1. A separator comprising:

a series of spaced parallel shaft means mounted for rotation in essentially the same plane;

means for rotating said shaft means in the same angular direction;

a series of similar non-circular discs mounted on each shaft means in spaced relation, with the discs on one shaft means being interspaced between the discs of adjacent shaft means;

means adjacent the end discs on said shafts for restraining lateral movement of a bed of heterogeneous material containing components of different specific gravities and sizes;

said discs having a plurality of first convex surfaces in equally spaced, radial positions and having a greater extension from said shaft means than second surfaces interspaced between said first surfaces;

said discs on one shaft means being mounted in a different angular relation to said shaft means than said discs on adjacent shaft means, whereby rotation of said shaft means will rotate said discs and cause an upward movement of the first surface of said discs in the same angular direction to engage said components of said material and propel said components upwardly and move said bed forwardly in the direction of rotation of said discs above the axis of said shaft means and will produce openings as the position of said second surface of said discs moves opposite the adja-

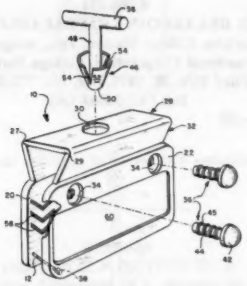
cent shaft means, whereby smaller and heavier components tend to be moved downwardly in said bed and fall through said openings, said openings between such second surfaces and an opposite shaft means determining the maximum size of components of said material which will fall through said separator.

4,266,677

SAMPLES CLAMP

Paul D. Dewsnap, New York, N.Y., assignor to Donaldson Display Company, Inc., South Hackensack, N.J.

Filed Jan. 19, 1979, Ser. No. 4,894
Int. Cl.[3] A47F *7/16*
U.S. Cl. 211—45 **11 Claims**



1. A tamper-proof samples clamp comprising:

a holder section foldable about itself into at least one pair of substantially parallel spaced clamp elements having at least one set of apertures which are in alignment when said clamp elements are disposed in parallel relationship;

at least one metal pin element integrally carried by one of said clamp elements and

a recess formed in the wall of the other clamp element opposite said pin element, having sufficient stiffness to permit penetration through the entirety of the material of samples positioned between the clamp elements and

a length sufficient to enter the opposing recess such that each pin element will be supported within its corresponding recess and be cooperable therewith, for securing such samples in place;

self-locking fastening means dimensioned and configures for insertion through each set of said aligned apertures to thereby draw and lock said clamp elements into clamping engagement with the samples therebetween; and

hanger means for supporting said holder section and the samples carried by the samples clamp.

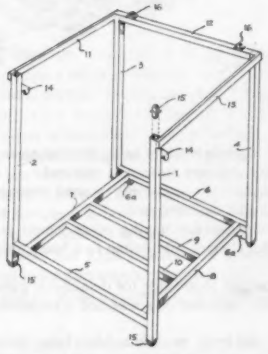
4,266,678

NESTING UNITS

Geoffrey J. Daly, East Killara, Australia, assignor to Brambles Holdings Limited

Continuation of Ser. No. 884,876, Mar. 9, 1978, abandoned. This application Sep. 5, 1979, Ser. No. 72,858
Claims priority, application Australia, Mar. 21, 1977, PC9493
Int. Cl.[3] A47B *47/00*; B65D *19/38*
U.S. Cl. 211—194 **2 Claims**

1. A racking unit adapted for stacking engagement with an identical racking unit or with a particular non-identical racking unit, said racking unit comprising a substantially rectangular plane base, a first pair of posts, and a second pair of posts having respective mutually confronting faces, the arrangement and positioning of said posts permitting the vertical interengagement of said racking unit with another racking unit, said first pair of posts being attached one each of adjacent extreme corners of said base, said first pair of posts extending in a direction substantially perpendicular to the plane defined by said base, said second pair of posts being attached one each to the other two adjacent extreme corners of said base, said second pair of posts extending in a direction substantially parallel to said first pair of posts, the separation between said second pair of posts being substantially equal to the separation between said first pair of posts, first, second, and third connecting members each extending parallel to a side of said base, said first pair of posts being connected one each to a respective one each of said second pair of posts by means of said first and second connecting members and said second pair of posts being connected together by means of said third connecting member extending directly between the confronting faces of said second pair of posts, two lug members one each attached to respective posts of said first pair of posts, said lug members each including a first portion which has two ends and is secured at one end to a respective post of said first pair of posts and extends towards that post of said second pair of posts to which said post of said first pair of posts is connected by one of said first and second connecting members so that the other end of the lug member is spaced from that post of said first pair of



posts to which said one end is secured, and a second portion which is secured to said other end of said first portion and extends towards said base, and spigot means fitted to the bottom of each post of said first and second sets of posts, said lug members being positioned to engage with their said second portions the open tops of the first pair of posts of another identical racking unit during the vertical nesting interengagement of said racking unit with said another racking unit, when said racking units are stored and said spigot means being adapted to engage the ends of corresponding posts of another identical racking unit when said racking unit and said identical racking unit are in a stacked configuration, and a pair of upwardly extending dowel means located on said third connecting member so as to engage the bottoms of the posts of a particular non-identical racking unit having a first pair of posts with separation identical to the separation between the first pair of posts of said racking unit and a second pair of posts with separation less than the separation between the second pair of posts of said racking unit, when said racking unit and said particular non-identical racking unit are stacked.

4,266,679

CONVERTIBLE BOOM MACHINE HAVING MODULAR BOTTOM PORTION

Dieter C. Juergens, Bark River, Mich., assignor to Harnischfeger Corporation, West Milwaukee, Wis.

Filed Apr. 9, 1979, Ser. No. 28,221
Int. Cl.[3] B62D *55/04*
U.S. Cl. 212—181 **10 Claims**

1. A machine, such as a crane, that has a lower supporting portion and an upper portion that is supported by said lower portion and is rotatable relative thereto about a vertical axis, said upper portion comprising a boom that normally projects

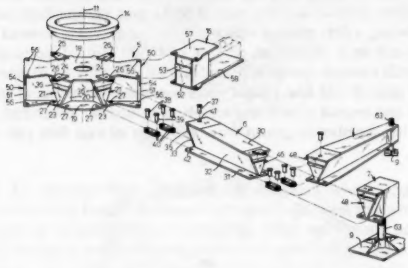
upwardly and mechanism for lifting a load supported by said boom, said machine being characterized by:

said lower portion comprising a hub-like member that is concentric to said axis and has substantial vertical depth, said hub-like member having

(1) a slewing ring on its top, concentric to said axis and upon which said upper portion is rotatably mounted,

(2) means at its sides defining four leg module holders,

(a) each arranged to provide for detachable connection to the hub-like member at vertically spaced locations of one of four elongated leg modules which project radially in relation to said axis,



(b) said leg module holders being further arranged

(1) at equal distance from said axis and

(2) at substantially uniformly spaced intervals around the hub-like member; and

(3) said hub-like member having other means at a pair of opposite sides thereof that define two body module holders,

(a) each arranged to provide for detachable connection to the hub-like member of a wheeled transporter module, and

(b) each of said body module holders being located laterally intermediate a pair of leg module holders.

4,266,680

FLOATING CRANE WITH LOAD RESLINGING DEVICE

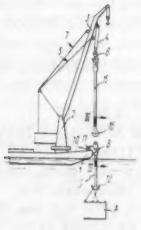
Nikolai D. Velikoselsky, prospekt Gagarina, 15, kv. 29; Anatoly I. Smirnov, ulitsa Marshala Birjuzova, 17, kv. 40; Nikolai Y. Perets, ulitsa Menshikova, 17, kv. 25, all of Sevastopol; Sergei S. Vinogradov, prospekt Kutuzovsky, 26, kv. 246, Moscow; Viktor I. Podbeltsev, ulitsa B.Morskaya, 38, kv. 4, and Pavel E. Lakhno, ulitsa Prutovtsev, 13, both of Sevastopol, all of U.S.S.R.

Filed Mar. 12, 1979, Ser. No. 19,661

Claims priority, application U.S.S.R., Mar. 16, 1978, 2592272; Nov. 22, 1978, 2688352

Int. Cl.[3] B66C *23/52*

U.S. Cl. 212—193 **5 Claims**



1. In floating crane apparatus including a floating base on which are mounted a load boom; a load-handling device suspended from said load boom; means for luffing said boom; means for lifting the load suspended from said load-handling device; the improvement comprising a device for reslinging a suspended load, including: a catch mounted on said floating base so as to project overboard of said floating base in the course of load reslinging procedure; an elongate tie member; a load-handling device provided on one of the ends of said tie member; and means provided on the other end of said tie member for successively linking said tie member to said load-handling device of said load boom and to said catch in the course of a load reslinging procedure.

4,266,681

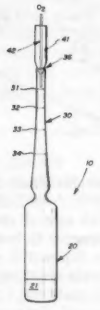
MULTIPLE BREAKPOINT RESEALABLE AMPOULE

Alan D. Fredericks, College Station, Tex., assignor to Oceanography International Corporation, College Station, Tex.

Filed Feb. 28, 1977, Ser. No. 772,983

Int. Cl.[3] B65D *1/02*

U.S. Cl. 215—32 **2 Claims**



1. A reaction carrier and reagent container for use in analytical chemistry capable of being broken and resealed numerous times comprising:

a glass vial having an elongated neeck, said neck being in open communication with said vial and being of relatively small circumference relative to said vial said neck having a plurality of breakpoints and a plurality of heat sealpoints located thereon for successive breaking and sealing of the ampoule.

4,266,682

STOPPING DEVICE FOR A THREADED NECK CONTAINER

Francois Speitel, Connerre, and Robert Speitel, Parigne L'Eveque, both of France, assignors to Teleplastics Industries S.A., Parigne L'Eveque, France

Filed Mar. 13, 1979, Ser. No. 20,020

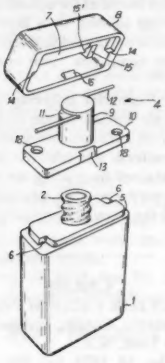
Claims priority, application France, Mar. 17, 1978, 78 07880; Jan. 23, 1979, 79 01600

Int. Cl.[3] B65D *41/04*

U.S. Cl. 215—331 **8 Claims**

1. A stopping element of the capsule type consisting of an element including a cylindrical cap threaded inside for being screwed onto the corresponding threading of a flask neck and of an outer embellisher nesting on the surface of the flask surrounding the neck, the element including the threaded cap being slidably engaged in axial displacement in a correspond-

ing seating of the embellisher with means resiliently biasing said element within the seating of the embellisher and means



liable to transmit a torque between said embellisher and said element.

4,266,683

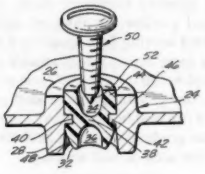
OUTDOOR JUNCTION BOX

Martin S. Sellinger, Livingston, N.J., assignor to Keene Corporation, New York, N.Y.

Continuation of Ser. No. 942,930, Sep. 18, 1978, abandoned. This application Feb. 11, 1980, Ser. No. 120,684

Int. Cl.³ H02G *3/08*

U.S. Cl. 220—3.2 **1 Claim**



1. An electrical junction box comprising:

a generally rectangular housing formed of interconnected walls, at least one of said walls having surfaces defining a mounting opening extending therethrough;

said one wall including a lug surrounding said mounting opening, said lug having a first elongated sleeve portion extending into the box interior, a second elongated sleeve portion extending away from the box interior, and an inwardly flange interposed between said portion, said lug first and second sleeve portions including passageways extending therethrough communication with said openings; and,

an elastomeric grommet positioned in and closing said opening; said grommet comprising an elongated member having a first section in sealing engagement with said lug first sleeve portion, a second section extending into said lug second sleeve portion chamferred so as not to engage said lug second sleeve portion along the length thereof, and a web section interconnecting said first and second sections and integral therewith;

said web being defined by counterbores extending into said grommet first and second sections terminating short of each other; and

a groove extending about said grommet web section, said lug flange being tightly seated within said web groove.

4,266,684

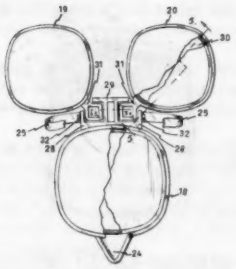
JUG WITH SUGAR BOWL, COFFEE POT AND CUPS

Yamil A. Maccise, Ciudad Satelite, Mexico City, Mexico

Filed Mar. 8, 1979, Ser. No. 18,554

Int. Cl.³ B65D *21/02*

U.S. Cl. 220—23.83 **3 Claims**



1. In combination, a jug and a set of additional containers comprising cups, a sugar bowl and a coffee container, the jug having vertical parallel longitudinal rails located on the exterior thereof, and a vertical crossbar of "T"-shaped cross-section, positioned between said rails and defining with said rails a pair of vertical slots which provide access to respective recesses, each container of said set having a handle which has a neck portion and a head portion, said head portion being configured for captive retention in one of said recesses with said neck portion located in the slot which provides access to said one recess, and each container of said set having a top opening and having an annular recess at its lower end arranged to fit into and close the top opening of another container of the set.

4,266,685

CAN BODY AND METHOD FOR MAKING SAME

Harry W. Lee, Jr., Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Nov. 30, 1979, Ser. No. 99,099

Int. Cl.³ B65D *6/38*

U.S. Cl. 220—74 **14 Claims**

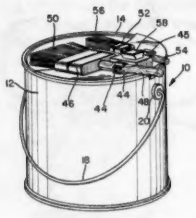
1. In a metallic can body having a cylindrical sidewall, an opening at an end thereof and a flange region adjacent said opening, the improvement wherein said flange region comprises a plurality of corrugations, said corrugations extending to said opening, said corrugations being generally parallel to one another and said corrugations being generally perpendicular to the axis of said can body, said corrugations acting to increase the effective thickness of the metal in said flange region so as to increase the stiffness thereof and decrease deflection and wrinkling during necking thereof.

4,266,686

PAINT CAN ATTACHMENT FOR HOLDING BRUSHES

Joseph F. Carter, 567 Tremont St., Rehoboth, Mass. 02967

Filed Jul. 2, 1979, Ser. No. 54,164
Int. Cl.³ B65D *25/20, 43/08;* **B65B** *39/00*
U.S. Cl. 220—90 **1 Claim**



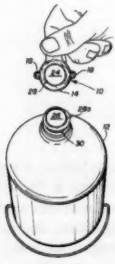
1. An attachment for a paint can for supporting one or more brushes thereon, wherein said paint can includes a container body having an open top defined by an annular lip, comprising a tray that is mounted on said annular lip at the upper end of said container body, said tray having an overall configuration that occupies less than the entire space of said open top to provide for access to the interior of said container body, means for removably securing said tray to said annular lip, and a brush holder member secured to said tray adjacent to the outer edge thereof, said brush holder member including clip means for receiving the handle of at least one brush therein, the bristle portion of said brush being received on said tray when the brush is located by said clip means in the nonuse position thereof, and said tray having a conformation that provides that any excess paint deposited thereon from said brush will drain back into the interior of said container, said brush holder member having oppositely inclined side walls to which said clip means is joined, said inclined side walls defining an angle with the horizontal axis of said brush holder member for locating a brush secured to the clip means in an angular relationship relative to said horizontal axis, wherein a pair of brushes may be secured in said clip means in adjacent relation without interference with each other.

4,266,687

SEALING COVER AND METHOD FOR RESEALING AN INTRAVENOUS CONTAINER

Robert Cummings, Richardson, Tex., assignor to U.S. Clinical Products, Inc., Richardson, Tex.

Filed Feb. 29, 1980, Ser. No. 125,988
Int. Cl.³ B65D *51/20, 39/00, 41/00*
U.S. Cl. 220—257 **26 Claims**



1. A sealing cover for providing a sterile cover to reseal the rubber membrane and surrounding metal rim of the top of an intravenous solution container, comprising:

a disk sized to substantially cover the area of the rubber membrane of the container top;

an annular ring surrounding said disk, said ring having a layer of adhesive material for adhering to the metal rim of the container cap as well as a layer of self-destructing material to leave a portion of said self destructing material adhering to the metal rim upon removal of the sealing cover; and

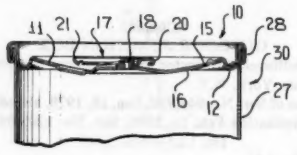
an upper layer of material adhering to said annular ring forming an upper surface of the cover, said upper layer being formed from a material substantially impermeable to moisture and bacteria, whereby the sterility of the rubber membrane is retained by placing the sealing cover on the container top with the disk centered over the rubber membrane and the annular ring adhesively engaging the metal rim.

4,266,688

EASY ACCESS TAB FOR VACUUM PACKED PRODUCTS

Jeremy T. Reid, Oakville, Canada, assignor to The Continental Group, Inc., New York, N.Y.

Filed Dec. 14, 1979, Ser. No. 103,871
Int. Cl.³ B65D *41/32*
U.S. Cl. 220—273 **7 Claims**



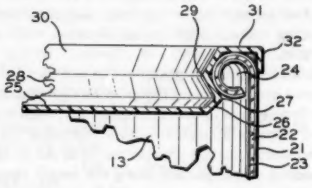
1. In an easy opening container panel, scoring defining a displaceable panel portion, an integral upstanding rivet disposed adjacent said scoring for mounting a tab in a position to exert an opening force on said displaceable panel portion; said panel being domed in the area of said rivet to displace said rivet upwardly out of the general plane of said panel, the resultant dome including a full height dome part remote from said scoring and said dome gradually sloping back to the original plane of said panel in the area of said scoring.

4,266,689

CLOSURE FOR TOP INSIDE ROLL CONTAINER

Lance A. Asher, Camden Point, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 1, 1979, Ser. No. 80,605
Int. Cl.³ B65D *39/00*
U.S. Cl. 220—307 **15 Claims**



1. A closure comprising:

a central discoidal portion;

a first section flaring upward and outward relative to and continuous along the extent of said central discoidal portion;

a second section flaring upward and inward continuous with

said first section and forming an outside ridge and an inside groove along the line of continuity with said first section;

a third section flaring upward and outward continuous with said second section and forming an inside ridge and an outside groove along the line of continuity with said second section;

a closure rim having a downward turned skirt directed outward relative to said central discoidal portion and continuous with said third section; and

a skirt directed downward continuous with said rim.

4,266,690

WELDING ELECTRODE DISPENSER

Gordon W. Holmes, Mississauga, and William Marykuca, Stoney Creek, both of Canada, assignors to Red-D-Arc International Inc., Hamilton, Canada

Filed Feb. 26, 1979, Ser. No. 14,958

Claims priority, application United Kingdom, May 31, 1978, 25018/78

Int. Cl.[3] **B65G** *61/00*

U.S. Cl. 221—254 **18 Claims**

1. A portable dispenser device for rigid elongate rod-like articles, preferably welding electrodes, comprising:

an elongate casing having a first upper internal unobstructed tubular cavity for receiving a plurality of said articles therein to be dispensed one at a time therefrom and a second lower internal elongate coaxially-arranged tubular cavity;

top end closure means having means defining an axial opening therein communicating with said first cavity and dimensioned to permit the passage of one only of said articles from said first cavity at one time, said top closure means normally being mounted at the upper end of said casing enclosing the upper end of said first cavity but being selectively removable therefrom to permit the placing of a plurality of of said articles in said first cavity at one time;

said top closure means including guide means for guiding an article to be dispensed to said axial opening for passage therethrough and releasable friction grip means associated with said opening to frictionally grip a stationary partially ejected article to prevent said article from returning to said first cavity;

cavity separator means mounted inside said casing in spaced relationship with respect to said top closure means to define the lower extremity of said first cavity and to separate said first cavity from said second cavity, said cavity separator means having an axial opening therein;

said cavity separator means being slidably mounted in said second cavity for reciprocal movement from engagement with stop means located within said second cavity towards said top closure means;

axially reciprocal pusher rod means axially located in said second cavity for extension through the latter opening for engagement with the lower end of one of said articles for ejection of the same through said top closure opening upon axial movement of said pusher rod means through the separator means opening towards said top closure means;

manual actuator means external of said casing and operably connected to said pusher rod means for actuation of said axial reciprocation for ejection of an article from said first cavity;

lower end cap means mounted to said casing at the opposite end thereof from said top end closure means and defining the lower extremity of said second cavity;

cam means located in said second cavity and constructed to effect movement of said cavity separator means towards said top closure means; and

cam actuator means operably connected to said manual actuator means;

said cam means being pivotally mounted in said cavity and including a front cam member capable of engaging said cavity separator means upon pivotal movement of said cam means in one direction to effect said cavity separator means movement towards said top closure means and cam follower means capable of engaging said cam actuator means for pivotal movement in either direction.

4,266,691

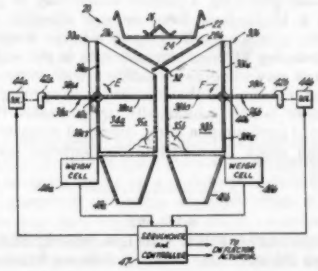
CONTINUOUS AUTOMATIC FEEDING APPARATUS

Casimir S. Wolwowicz, Randolph, N.J., assignor to Gero Industries, Inc., Hillside, N.J.

Filed Jul. 11, 1978, Ser. No. 923,533

Int. Cl.[2] **G01G** *13/00*

U.S. Cl. 222—77 **9 Claims**

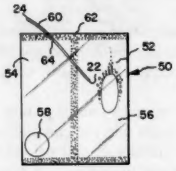


9. In combination material supplying means including feeder means having a discharge area and spoon means extending beyond said feeder discharge area, first and second adjacent hoppers each disposed beneath a portion of said feeder means and a portion of said spoon means, first and second deflectors means respectively disposed between said first and second hoppers and said material supplying means for selectively deflecting material supplied by said material supplying means to the other of said hoppers and means for selectively disposing each said deflector means in a first position and a third position for full communication and full isolation between said material supplying means and said hopper associated with said deflector means, and a second, intermediate position permitting communication between said spoon means and said associated hopper.

4,266,692
SEALED CONTAINER HAVING A DEFORMABLE ELONGATE MEMBER IN THE SEAL AREA

James A. Clark, Honeoye Falls, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Aug. 7, 1978, Ser. No. 931,639
Int. Cl.[3] B65D *33/36, 81/32*
U.S. Cl. 222—94 8 Claims



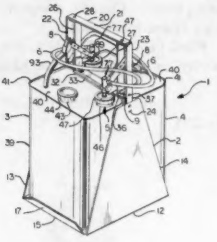
1. A sealed container for enclosing matter therein,
said container including adjacent portions sealed together at a seal area to close said container; and
a deformable elastic elongate member having respective portions extending from outside said container through said seal area between said adjacent portions and into said container, said elongate member in its undeformed condition having a substantially uniform cross section in the portions thereof which extend through said seal area and into said container, said elongate member in said seal area and in said container having a cross sectional shape of greater width than thickness and with tapered edges and thereby being configured to facilitate sealing said container as sealing pressure is exerted against said seal area adjacent portions, said elongate member being deformed by said sealing pressure in said seal area to a smaller cross-sectional area than the cross-sectional area of the undeformed member whereby when said sealing pressure is released said elongate member, due to its elasticity, tries to return to its undeformed condition of larger cross-sectional area thereby exerting a positive sealing force against the adjacent portions of the container where said elongate member through said seal area of said container, said portion of said elongate member extending outside said container providing a portion which may be pulled to exert a longitudinal force on said elongate member, thereby stretching said elongate member longitudinally and reducing its cross-sectional area in the seal area to facilitate easy withdrawal of said member without rupturing the seal area and thereby leaving an opening into said container which substantially approximates the cross sectional configuration of the deformed elongate member through which the matter in the container may be expelled.

4,266,693
PORTABLE FUEL AND OIL DISPENSER

N. Leonard Pfeiffer, 5313 Newton, Shawnee Mission, Kans. 66202

Filed Jun. 11, 1979, Ser. No. 47,131
Int. Cl.[3] B67D *5/52*
U.S. Cl. 222—135 9 Claims

2. A pump assembly for a fluid dispenser container comprising:
(a) a pump body extending into an interior of a container and having an internal passage including an end with a pump piston receiving chamber;
(b) a pump rod having an internal passage movably mounted for longitudinal reciprocation therein and having a piston portion mounted to a lower end thereof with an inlet port adjacent said piston portion communicating with the passage in said pump rod for entry of fluid into said pump rod;
(c) said piston portion including at least one passage therethrough for drawing fluid from said container into said piston chamber and having closure means operable to open and close said passage in response to pressure differentials thereacross whereby an upstroke of said pump rod and piston portion causes transfer of fluid;
(d) said pump body having a head portion disposed from said chamber including guide means and a seal surrounding said pump rod, said head portion having a port extending generally transversely therethrough and spaced beyond said seal and communicating with the interior of said container and the internal passage of said pump body for permitting any possible fluid leaking past said seal to drain into said container; and
(e) a pump discharge valve operably connected to the internal passage of said pump rod for selectively closing said internal passage.

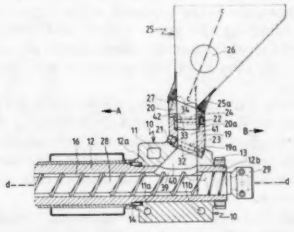


6. A portable dispenser apparatus for selectively dispensing different fluids and comprising:
(a) a carrier having a handle means medially positioned thereon;
(b) first and second containers mounted on said carrier with said handle means generally upstanding therebetween;
(c) a pump means connected to each of said containers and respectively having a pump actuation handle pivotally mounted to said handle means for support thereof;
(d) a delivery conduit leading from said pump means for use in routing fluids to an article to be serviced; and
(e) storage means positioned generally between said containers for receipt of said delivery conduit when not in use.

4,266,694
CONVERTIBLE HOPPER MOUNTING FOR INJECTION MOLDING MACHINE

Karl Hehl, Arthur-Hehl-Strasse 32, 7298 Lossberg 1, Fed. Rep. of Germany

Filed Aug. 6, 1979, Ser. No. 64,252
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1978, 2834203
Int. Cl.[3] B29B *5/02;* B67C *9/00*
U.S. Cl. 222—167 13 Claims



1. A mounting structure for the raw material hopper of an injection unit which plastifies and injects the raw material into the injection molding die of an injection molding machine, the

mounting structure forming an adjustable flow channel connection between the hopper and the plastification cylinder of the injection unit, making it possible to obtain a substantially vertical orientation of the hopper in relation to a selectively horizontally or vertically oriented plastification cylinder, the hopper mounting structure comprising in combination:

a hopper base at the bottom end of the hopper;

a mounting hub associated with a rearward portion of the plastification cylinder of the injection unit, the mounting hub having an opening in the form of a first flow channel portion which leads to the inside of the plastification cylinder; and

a short tubular connecting sleeve attached on its two axial ends to the hopper base and to the mounting hub, respectively, so that the bore of the connecting sleeve forms a second flow channel portion which leads from the first flow channel portion to the bottom of the hopper; and wherein

the connecting sleeve includes, associated with one of its attached axial ends, means for rotationally adjusting the hopper relative to the plastification cylinder about an adjustment axis which is inclined, by an acute angle of substantially no more than 45°, to the axis of the bore of the connecting sleeve, and which is also inclined, by an acute angle of substantially no more than 45°, rearwardly away from a radial plane through the plastification cylinder; and

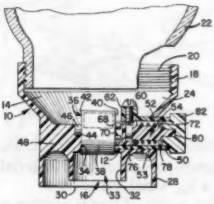
the rotational adjustment means has two favored adjustment positions, 180° apart, in which the two acute angles form a common center plane, whereby in one of the two adjustment positions, intended for a horizontally oriented plastification cylinder, the resultant general flow direction through the flow channel connection is substantially perpendicular to the axis of the plastification cylinder, and, in the other adjustment position, intended for a vertically oriented plastification cylinder, the resultant general flow direction through the flow channel connection is inclined outwardly, away from the axis of the plastification cylinder, by an acute angle of substantially no more than 45°.

4,266,695

SUGAR DISPENSER

Armando Ruperez, Edificio 7, Local 7-C, Calle El Recreo, Sabana Grande, Caracas, Venezuela

Filed Nov. 6, 1979, Ser. No. 92,258
Int. Cl.³ B67D *5/06*
U.S. Cl. 222—185 **13 Claims**



1. A manually operable dispenser adapted to be threadedly secured to the open mouth of a bulk container and operable to serve predetermined quantities of a material such as sugar, the dispenser serving to support the container in an inverted position and comprising:

a dispenser housing having an internally threaded upper portion adapted to engage the mouth portion of a container and having a lower portion defining a dispensing chute and a support base;

a divider wall in said housing and cooperating with said support portion of said housing to define a filling chamber;

a dispensing aperture in said divider wall to provide communication between said filling chamber and said dispensing chute;

transfer means comprising a hollow drum, the interior of which forms a receptacle of predetermined size for receiving a predetermined quantity of material from said filling chamber;

means for mounting said hollow drum for axial rotation in said dispensing aperture so that said hollow drum blocks the passage of material from said filling chamber to said dispensing chute, the axis of said drum being parallel to but located above said divider wall so that a limited portion of the circumference of said drum extends downwardly through said divider wall;

means for manually and selectively rotating said hollow drum to move said drum in a first direction to carry said receptacle out of said filling chamber, through said dispensing aperture to said dispensing chute whereby a predetermined quantity of material may be deposited in said dispensing chute for delivery out of the container; and

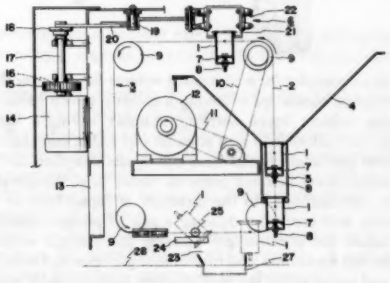
biasing means for rotating said transfer means in a second direction to normally maintain said receptacle in communication with said filling chamber.

4,266,696

CONVEYOR DEVICE FOR SUPPLYING BULK FOODS IN A MEASURED MANNER

Hatsuo Sakurazawa, 15-banchi, Shinozuka, Fujioka-shi, Gunma-ken, Japan

Filed Jan. 26, 1978, Ser. No. 872,472
Claims priority, application Japan, Aug. 8, 1977, 52-94879
Int. Cl.³ B65G *47/40*
U.S. Cl. 222—197 **4 Claims**



1. A conveyor device for supplying bulk foods in a measured manner characterized in that a plurality of measuring containers each having a flange on a peripheral surface thereof are pivotally supported on endless conveyor strips at predetermined distances between each other and in a manner such that said measuring containers have their open ends normally directed upwardly to thereby comprise an endless conveyor, a hopper, a guide cylinder extending from a lower part of said hopper, said conveyor passing upwardly through said guide cylinder from the bottom part of said hopper through an upper part thereof;

said containers being spaced such that, and said endless conveyor ascending in a manner such that at least one measuring container is always within said guide cylinder with its said flange maintaining sliding sealing contact with the inner surface of said guide cylinder;

an oscillating device disposed adjacent the track of said endless conveyor, said oscillating device being so constructed as to oscillate each said measuring container while it is still within the outer edge of said hopper after having scooped bulk material in order to cause excess quantities of said bulk material to fall into said hopper;

and means provided at an exhausting station for discharging

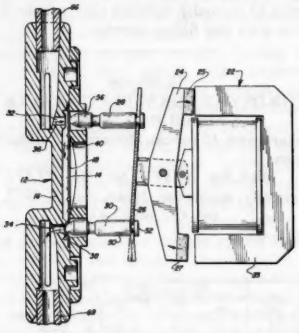
the material on said endless conveyor comprising means for inverting said measuring containers.

4,266,697

CONTROLLED VOLUME LIQUID METER DEFINING IMPROVED PLUNGER MEANS

Nicholas Zissimopoulos, Schaumberg, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Mar. 12, 1979, Ser. No. 19,391
Int. Cl.³ A61M 5/14
U.S. Cl. 222—450 **6 Claims**



1. In a controller for a controlled volume liquid meter defining aperture means for receiving a cassette which includes a variable volume liquid metering chamber having a flexible membrane wall, an inlet port adjacent one end of said chamber, an outlet port adjacent the other end of said chamber, the inlet and outlet ports defining paths of liquid flow therethrough which are transverse to the direction of liquid flow in said chamber, said controller defining a pair of plunger members, and means for alternatingly pressing the plunger members against said membrane wall to alternatingly open and close said inlet and outlet ports, the improvement comprising, in combination:

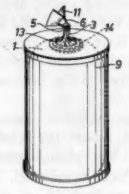
said plunger members being carried by a leaf spring member which is deflectable in the direction of the axis of said plunger members, said plunger members also possessing means permitting variation of the length of each plunger member between a maximum and a minimum length, and spring means urging said plunger members to occupy their maximum lengths, whereby the force with which said plunger members press against the membrane wall is limited to a value governed by said spring means, each plunger member comprising a sleeve open at one end and closed at another end, and a plunger head carried in the bore of said sleeve and slidably movable therein, a forward portion of said plunger head projecting outwardly from the bore of said sleeve, and spring means between said plunger head and the closed end of said sleeve for biasing said plunger head into an axially outward position with respect to said sleeve, said plunger head further defining a first flange positioned adjacent its rear end, said sleeve defining a second flange extending radially inwardly from its open mouth, whereby said second flange prevents removal of said plunger head from the sleeve by engagement with the first flange.

4,266,698

OPENING ARRANGEMENT FOR PACKING CONTAINERS OF THIN PLASTIC FILM TOGETHER WITH A PACKING CONTAINER PROVIDED WITH THE OPENING ARRANGEMENT

Anders R. Rausing, Lausanne, Switzerland, assignor to Tetra Pak Developpement SA, Lausanne, Switzerland

Filed Sep. 13, 1979, Ser. No. 75,217
Claims priority, application Switzerland, Sep. 18, 1978, 9736/78
Int. Cl.³ B65D 33/36, 75/66, 77/32
U.S. Cl. 222—528 **8 Claims**



1. A packing container comprising:

an outer casing including a first and a second end portion, said casing having an opening in said first end portion;

a package body disposed within said outer casing, said body having a thin flexible wall;

means for holding a portion of the wall in a folded position to form a fold therein;

a cutting thread disposed within said fold;

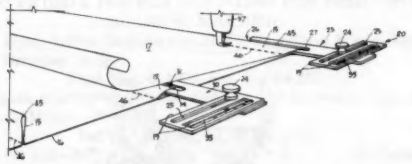
closure means on said opening, said cutting thread being secured to said closure means, whereby when said closure means is pulled from said opening, said cutting thread cuts through said portion of the wall to provide an opening therein.

4,266,699

PLEAT FORMING MEANS AND METHOD

Harley G. F. Ladd, 34 Main South Rd., O'Halloran Hill, State of South Australia, Australia

Filed May 10, 1979, Ser. No. 37,773
Int. Cl.³ A41H 43/00
U.S. Cl. 223—34 **10 Claims**



1. Means for forming a plurality of pleats to be sewn and equally spaced across one edge of a material workpiece, said means including a jig which comprises:

a support having a pair of finger guiding surfaces;

locating means carried by a platen of a sewing machine cooperable with the support to locate the support with respect to the sewing machine needle,

a loop forming finger having an edge which, in use, is a loop forming edge;

a spacing finger bifurcated by a slot defined by slot edges extending inwardly from an extended end thereof, an edge of said slot, in use, being a datum engaging surface;

guide engaging surfaces on the respective fingers engaging said support finger guiding surfaces for movement of each finger with respect to the support and also with respect to the other finger while retaining the loop forming edge parallel to the datum engaging surface;

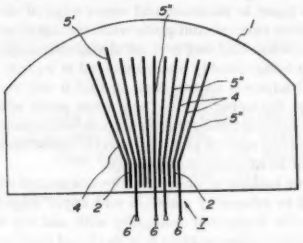
and locking means between each of the fingers and the support operable to lock each respective finger in any one of a plurality of positions on the support.

4,266,700

FREELY ADJUSTABLE PIN-TUCKING DEVICE FOR USE IN A PIN TUCKING MACHINE

Shinichi Wakasono, Mugi, Japan, assignor to Vari-O-Matic Machine Corporation, Japan

Filed Sep. 20, 1979, Ser. No. 77,349
Int. Cl.³ A41H *43/00*
U.S. Cl. 223—34 **2 Claims**



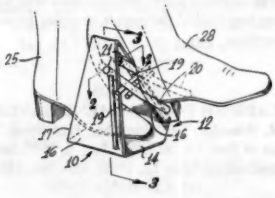
1. A freely adjustable pin-tucking device for use in a pin-tucking machine comprising a guide board made of metal, plastic, wood, or the like plate shaped material, the guide board is provided with a plurality of even spaced grooves having at rear end even spaced parallel portion extending to radially spaced grooves and deep inserting grooves at middle thereof, and at least one separate set of guide members corresponding to the number of the inserting grooves, the guide members having tucking guides at the rear end and having inserting limbs of different bent angles to match with the radial form of the grooves, the guide members further provided with an inserting leg to be inserted with said inserting grooves to fix the guide members on the guide board in detachable and replaceable manner.

4,266,701

BOOT PULL

James H. Burgess, 72-945 Tamarisk, Palm Desert, Calif. 92260

Filed Aug. 30, 1979, Ser. No. 71,308
Int. Cl.³ A47J *51/02*
U.S. Cl. 223—116 **7 Claims**



1. A boot pull comprising:

a pair of outwardly divergent boot gripping members adapted to receive the heel portion of a boot between them;

a pair of side pieces that converge toward a point above said gripping members; and

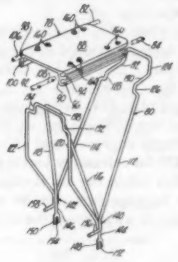
means for pivotally attaching said gripping members to said side pieces and for causing movement of said gripping members toward each other as they pivot upwardly, whereby a boot can be removed from the wearer's foot by inserting it between said gripping members and pulling upwardly causing said gripping members to move inwardly to firmly hold said boot against continued upward movement.

4,266,702

PANNIER MOUNTING ARRANGEMENT FOR CYCLES

W. Shaun Jackson, 809 Sycamore, Ann Arbor, Mich. 48104, and Leslie E. Bohm, 29560 Rutherland North, Southfield, Mich. 48076

Division of Ser. No. 768,467, Feb. 14, 1977, Pat. No. 4,174,795.
This application Feb. 1, 1979, Ser. No. 8,801
Int. Cl.³ B62J *9/00*
U.S. Cl. 224—31 **10 Claims**



1. In combination, a cycle carrier rack and an arrangement for mounting a luggage item on the cycle carrier rack, comprising:

a horizontally extending load support adapted to extend over the rear wheel of a cycle;

bracket means including a plurality of strut members fixedly secured to both sides of said load support and extending downwardly, said bracket means also including means adapted to fixedly secure the lower ends of said strut members to a cycle;

at least one front extension member mounted to said load support for slidable adjustment forwardly of said load support by relative movement therebetween;

attachment means carried by an outer end of said at least one front extension member adapted to secure said outer end to a cycle, whereby said load support may be mounted to cycles having structure of differing configurations to which said front extension member is adapted to be secured;

an elongate element;

at least a first channel section adapted to slidably receive and support said elongate element;

means adapted for mounting one of said elongate element or said first channel section on a luggage item and extending along said luggage item;

means adapted for securing the other of said elongate element or said first channel section on said load support in a longitudinal direction substantially parallel to the length of said cycle, whereby said luggage item may be mounted to or removed from said load support by fore or aft sliding movement of said elongate element into said first channel section to support said luggage item on said load support; and

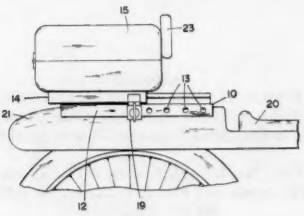
releasable holding means for preventing fore and aft sliding movement between said first channel section and said elongate element.

4,266,703

SLIDE MOUNT FOR MOTORCYCLE LUGGAGE BOX

Reuben Litz, 543-19th Ave. North, South St. Paul, Minn. 55075

Filed Jan. 28, 1980, Ser. No. 115,744
Int. Cl.³ B62J *7/04*
U.S. Cl. 224—32 A **4 Claims**



1. An adjustable mount for carrying a luggage box on a motorcycle, comprising:

a. a first rigid plate (**10**) fixedly mounted to the top of a motorcycle frame rearward of the driver's seat (**20**) having an elongated groove (**11**) extending rearward from just behind the driver's seat;

b. a second rigid plate (**14**) fixedly attached to the underside of a luggage box (**15**) having an elongated tongued rail (**16**) for slidingly engaging said groove in the first plate;

c. means (**19, 13**) for releasably locking said first and second plates together when the rail is engaged in the groove;

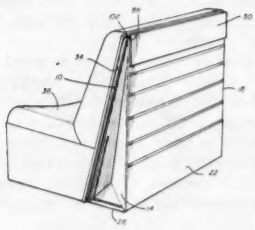
d. whereby a luggage box can be selectively positioned rearward near or away from the driver's seat.

4,266,704

SHAPED STORAGE BAG

Otto W. Swanson, 605 Belmont St., Belmont, Mass. 02178

Continuation of Ser. No. 749,015, Dec. 9, 1976, abandoned, which is a continuation of Ser. No. 628,334, Nov. 3, 1975, abandoned. This application Aug. 4, 1978, Ser. No. 931,180
Int. Cl.³ B60R *7/00*
U.S. Cl. 224—42.46 A **7 Claims**



1. A shaped storage bag, to be mounted on the back of a vehicle seat having a non-vertical, overhanging surface, having an inside and an outside and comprising

a rear panel, a front panel, a bottom panel, first and second side panels, a top flap, mounting means, stiffening means, and releasable locking means;

said mounting means fastening said rear panel to said overhanging surface;

said rear panel, said front panel, said first and second side panels, and said bottom panel being interconnected with one another at their adjacent edges, but with the upper edge of said front panel and the top edges of said side and rear panels being free of one another;

said first and second side panels being flexible so that said upper edge of said front panel may be moved into contiguity with said top edge of said rear panel to bring said storage bag into its closed configuration or may be moved away from said top edge, in a substantially horizontal direction, to bring said storage bag into its open configuration,

said front panel lying, when said storage bag is in said closed configuration, in a substantially vertical plane and extending down to its interconnection with said bottom panel substantially directly below said top edge of said rear panel;

said storage bag having, when in said open configuration an upper opening defined by said top edges of said first and second side panels and said rear panel and the upper edge of said front panel;

said stiffening means comprising a rigid front rod;

said front rod being interconnected with said rear panel and said front panel to maintain said upper edge of said front panel in close vertical contiguity with said top edge of said rear panel when said bag is in its closed orientation;

said top flap being flexibly interconnected at its rear to said rear panel adjacent its top edge so that it can be swung down over the upper edge of said front panel when said bag is in its closed configuration and can be displaced back behind said top edge of said rear panel to allow said bag to be brought to its open configuration;

said releasable locking means being interconnected with said rear panel to releasably maintain said upper edge of said front panel in horizontal contiguity with said top edge of said rear panel when said bag is in its closed configuration,

said first side panel having an extraction opening, allowing extraction of the contents of said storage bag, located at least in part adjacent the bottom edge of said first side panel;

and said first side panel having closure means for opening and closing said extraction opening,

securing means for removably securing a flexible liner bag in said storage bag;

said securing means comprising a rigid back rod, at least one second clamp, and at least one clip;

said second clamp being interconnected with said rear panel;

said liner bag being folded over said back rod and being yieldably maintained by said second clamp;

said back rod being inside said storage bag and with said liner bag, adjacent and substantially parallel to said top edge of said rear panel;

said liner bag being folded over said front rod where it interconnects with said front panel so as to bring the opening of said liner bag in substantial coincidence with the opening of said storage bag defined by said upper edge of said front panel, said top edge of said rear panel and said top extremities of said first and second side means;

at least one of said clips being removably clamped over said front rod where it interconnects with said front panel with the liner bag folded thereover in order to secure said liner bag thereto.

4,266,705

CARRIER FOR GARMENT HANGERS

Raymond R. Wheeler, 39, Nixon St., Hamilton, New Zealand

Continuation of Ser. No. 912,685, Jun. 6, 1978, abandoned. This application May 12, 1980, Ser. No. 148,883
Int. Cl.³ B65D *71/00*
U.S. Cl. 294—163 **11 Claims**

1. A carrier for garment hangers comprising:

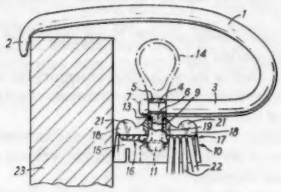
(i) a saddle member which includes

(a) a recessed bearing surface adapted to receive a plurality of garment hanger hooks in side by side relationship

(b) recessed locking portions at end points on said saddle member

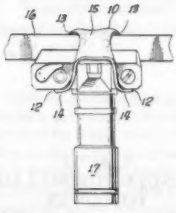
(ii) locking means carried by said saddle member and movable about an axis substantially perpendicular to said saddle member into a first position in which the locking means is aligned with the bearing surface and is engaged into the recessed locking portions, and into a second displaced position in which the locking means is disengaged

from the recessed locking portions permitting free engagement and disengagement of a hanger hook on and from the bearing surface,



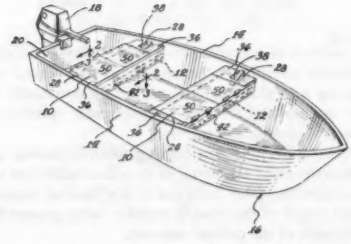
(iii) a handle, and
(iv) means coupling the handle to the saddle member.

4,266,706
BELT SUPPORT FOR CAMERAS
Arthur Gould, 1690 W. 6 St., Reno, Nev. 89503
Filed Jun. 5, 1980, Ser. No. 156,535
Int. Cl.³ A45F *5/02*
U.S. Cl. 224—253 **6 Claims**



1. A holder for supporting a camera of the type having laterally extended body portions on a belt when worn by a user, said holder comprising a strip-like member of elastic material provided with a pair of slots dimensioned to receive a belt therethrough with each of said slots also being adapted to simultaneously receive a corresponding one of the extended body portions of a camera whereby a camera can be firmly gripped and supported on a user's belt.

4,266,707
BOAT SEAT TACKLE BOX
Dale W. Rossman, 223 Ninth St., LaSalle, Ill. 61301
Filed Sep. 24, 1979, Ser. No. 78,642
Int. Cl.³ B60N *1/10*; B63B *29/00*
U.S. Cl. 224—275 **9 Claims**



1. A tackle box adapted for mounting in a working position on a boat seat of the type extending between opposite sides of said boat; said tackle box including

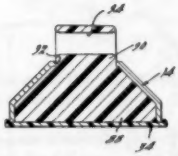
a bottom wall adapted to rest on an upper surface of said seat and including a pair of depending ribs along forward and aft edges thereof disposed adjacent respective fore and aft side edges of said seat to key said box on said seat against substantial fore and aft relative movement with respect thereto,

a peripheral side wall extending upwardly of said bottom wall forming a tackle holding compartment,

a top wall for said compartment mounted for pivotal movement with respect to said sidewall between an open position for providing access to the interior of said compartment and a closed position over said compartment providing a seating surface for said boat, and

lateral stop means engageable with opposite sides of said boat for preventing substantial relative movement between said tackle box and said seat in a direction laterally of said boat.

4,266,708
VEHICLE ARTICLE CARRIER
John A. Bott, 931 Lakeshore Dr., Grosse Pointe Shores, Mich. 48236
Continuation of Ser. No. 725,500, Sep. 22, 1976, Pat. No. 4,156,497. This application May 24, 1979, Ser. No. 41,919
Int. Cl.³ B60R *9/00*
U.S. Cl. 224—326 **15 Claims**



1. Article securing means for a motor vehicle comprising a plurality of elongated slats adapted to be secured to a surface of said motor vehicle in spaced relationship, each of said slats including spaced sidewalls and an integral upper wall extending between and interconnecting the uppermost portions of said sidewalls, said upper wall having an opening provided therein intermediate the ends of said slats,

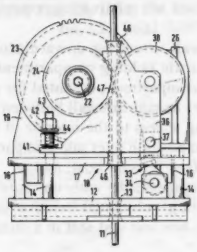
a fastening element having a body portion disposed interiorly within at least one of said slats and including tie down means extending outwardly through said opening,

said tie down means being adapted to cooperate with a tie down device so as to enable articles to be secured to said motor vehicle.

4,266,709
ADVANCE DRIVE MEANS FOR A PIPE SNAKE
Burkhard Krüger, Cologne, Fed. Rep. of Germany, assignor to Myers-Europe Pumpen GmbH, Essen, Fed. Rep. of Germany
Filed Jun. 8, 1979, Ser. No. 46,683
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1978, 2825228
Int. Cl.³ B65H *17/22, 51/10*
U.S. Cl. 226—181 **10 Claims**

1. An advance drive means for a pipe snake, comprising a roller set of at least two rollers adapted to roll off the pipe snake opposite each other and being reversible such that they selectively advance or retract the pipe snake, characterized in

that an additional drive means is associated with the pipe snake to impart to the pipe snake periodic longitudinal movements at



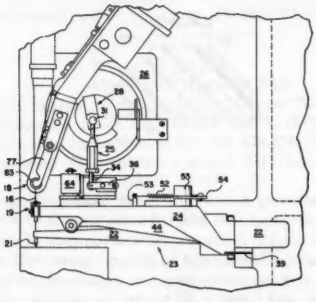
least in that direction which is opposed to the advance or retraction produced by the roll-off motion of the rollers.

4,266,710

WIRE BONDING APPARATUS

Glenn B. Bilane, Huntington Valley; Lawrence M. Rubin, Coatesville; Albert Soffa, Wynnewood, and Dan Vilenski, Hatboro, all of Pa., assignors to Kulicke and Soffa Industries Inc., Pa.

Filed Nov. 22, 1978, Ser. No. 962,916
Int. Cl.³ B23K *20/00*
U.S. Cl. 228—4.5 **46 Claims**



1. A processor controlled vertical drive apparatus for a bonding machine comprising:

a support frame,

a bonding head mounted on said support frame for vertical movement relative thereto,

a Z drive motor mounted on said support frame for positioning said bonding head,

said bonding head comprising a bonding tool lifter arm coupled to said Z drive motor,

first sensor means on said bonding tool lifter arm,

said bonding head comprising a bonding tool holder operable by and also operable relative to said bonding tool lifter arm,

second sensor means on said bonding tool holder,

a bonding tool mounted in said bonding tool holder for performing a bonding operation on a workpiece, and

means for detecting when said sensors are together or apart, thereby indicating when said bonding tool has first engaged said workpiece.

23. A processor controlled linear drive mechanism for converting rotary motion to predetermined linear motion comprising:

a support frame,

a drive motor mounted on said support frame,

rotary position indicating means connected to said drive motor,

eccentric drive means connected to said drive motor,

a driven follower member connected to said eccentric drive means,

said driven follower member being guided for movement in a linear motion path,

processor control means having a memory for storing digital data indicative of different increments of rotational movement of said drive motor,

said different increments of rotational movement being indicative of predetermined linear movements of said driven follower member,

said rotary position indicating means providing an output position signal coupled to said processor, and

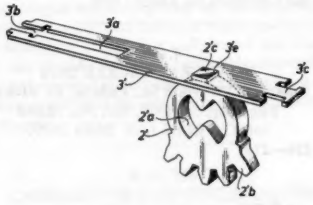
arithmetic means in said processor for comparing said output position signal with one of said digital data indications of a predetermined increment of rotational movement of said drive motor and for producing a forcing function signal coupled to said drive motor indicative of the difference between a desired predetermined linear position and the actual linear position of said driven follower member, whereby said drive motor forcing function signal is varied to position said drive motor at variable rates of change.

4,266,711

METHOD OF MANUFACTURING A LOCK CYLINDER FOLLOWER

Erik R. Tranberg, Eskilstuna, and Bo G. Widen, Torshälla, both of Sweden, assignors to GKN-Stenman AB, Eskilstuna, Sweden

Division of Ser. No. 844,445, Mar. 7, 1978, Pat. No. 4,185,481. This application Jul. 27, 1979, Ser. No. 61,560
Claims priority, application Sweden, Mar. 8, 1977, 7702602
Int. Cl.³ B23K *31/00*
U.S. Cl. 228—135 **4 Claims**



1. A method of manufacturing a lock follower, comprising:

(a) punch stamping a generally circular central member having a toothed segment projecting outwardly from an arc portion thereof and a non-circular aperture from a blank of sheet-metal material,

(b) forming a cylindrical bearing member having a partial circumferential slot between its ends of sufficient width to accommodate the thickness of the central member, the axial length of the bearing member being greater than the thickness of the central member,

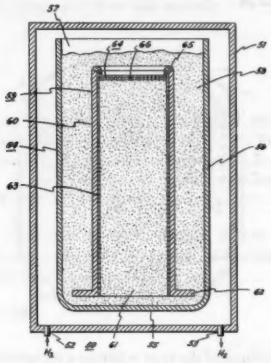
(c) inserting the central member through the slot and into circumferential engagement with the bearing member with the toothed segment projecting outwardly through the slot, and

(d) securing the central and bearing members together.

4,266,712
METHOD OF MAKING A SULFUR ELECTRODE CONTAINER

Dong-Sil Park; Manfred W. Breiter, both of Schenectady, and Randall N. King, Johnstown, all of N.Y., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Division of Ser. No. 898,485, Apr. 20, 1978, Pat. No. 4,234,668. This application Mar. 31, 1980, Ser. No. 135,216
Int. Cl.[3] H01M 2/02
U.S. Cl. 228—175 3 Claims

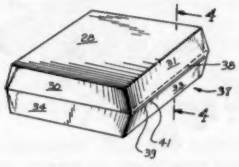


1. A method of forming a composite sulfur electrode container which comprises providing an outer metallic casing portion readily corroded by liquid sulfur and polysulfides, the outer metallic casing portion having opposite open ends, providing a metallic foil portion substantially corrosion resistant to liquid sulfur and polysulfides, forming the foil portion into a cylindrical shape, positioning the foil portion within the outer casing portion with the outer surface of the foil portion in substantially contiguous relation with the inner surface of the outer casing portion, providing a heated vapor containing chromium from a chromium source to the interior of the outer metallic casing portion with foil portion therein thereby bonding the foil portion to the inner surface of the outer metallic casing portion, diffusing chromium into the foil portion, bonding a chromium layer portion containing at least 60 weight percent chromium to the opposite surface of the foil portion, providing a metallic end cap within and adjacent one open end of the container, and providing the end cap with at least its inner surface substantially corrosion resistant to liquid sulfur and polysulfides.

4,266,713
UNITARY DOUBLE CAVITY CARTON

Raymond V. Maroszek, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Oct. 26, 1979, Ser. No. 88,637
Int. Cl.[3] B65D 5/26, 5/66
U.S. Cl. 229—33 25 Claims

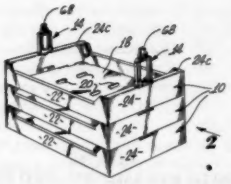


1. In a double cavity paperboard carton formed of a single cut and scored blank having a bottom cavity portion and a top cavity portion wherein each of the bottom and top cavities comprise hingedly connected front, side and rear walls adhered through suitable glue tabs, and the top and bottom cavities are hingedly connected through a center hinge line connecting their respective rear walls, the improvement which comprises provision of a fold area on said carton rear wall adjacent said center hinge line within which folding is controlled without buckling or outward bowing, said area being selected from the group consisting of (1) a hinge ridge defined by a member selected from (a) at least one line of weakness adjacent and parallel to said center hinge on either side thereof; and (b) an offset cut score or knife cut at the center of said center hinge; and (2) a hinge channel defined by at least one line of weakness on each side of said center hinge.

4,266,714
BOXES WITH COLUMN-FORMING INSERTS

Walton B. Crane, Sherman Oaks, Calif., assignor to Industrial Designs & Services, Encino, Calif.

Continuation of Ser. No. 6,666, Jan. 26, 1979, abandoned. This application Jul. 1, 1980, Ser. No. 165,135
Int. Cl.[3] B65D 5/22, 25/22
U.S. Cl. 229—34 HW 30 Claims

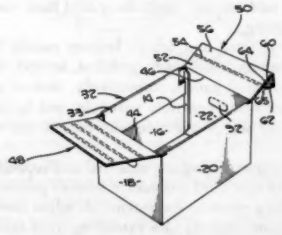


1. A box for produce and the like comprising:
a folded paperboard container having a floor, sidewalls and end walls; and
column-forming means secured to each of said end walls and extending at least the full height of said end walls of said container and including interlocking means at its upper and lower ends for lockingly engaging similar column-forming means of other boxes when a plurality of the boxes are arranged in a vertical stack for defining continuous columns extending completely through all the boxes in the stack, said column-forming means including means for vertically supporting said container.

4,266,715
CARTON

Earl G. Garrison, Fullerton, Calif., assignor to Thacker Container Company, Santa Fe Springs, Calif.

Filed Jul. 2, 1979, Ser. No. 54,202
Int. Cl.[3] B65D 5/06, 85/30
U.S. Cl. 229—37 E 8 Claims



1. A carton of sheet material comprising a pair of opposed rectangular front and rear side walls and a pair of opposed

rectangular left and right end walls and sealing tab means extending from an edge of one of said walls and adapted to be attached to the distant edge of another of said walls, said walls and tab being formed from a single blank of sheet material joined to one another along edges formed by scored fold lines, characterized in that:

said pair of end walls has foldably attached to end wall edges perpendicular to said fold line edges a pair of end flaps, each flap comprising a plurality of rectangular flap sections alternating with and foldably connected to relatively thin rectangular connector strips defined by scored fold lines, the flap sections including a major flap section foldably attached to an end wall edge and at least two minor flap sections substantially narrower in a direction perpendicular to said end wall edge than the major flap section,

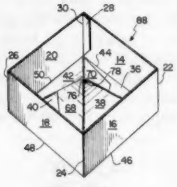
the flap sections of each flap being foldable into parallel relation to form a transverse beam extending between said side walls, said beam having an upwardly directed ledge formed by one of said connector strips for supporting a load, and each major flap section being in juxtaposed relation with the inner face of its end wall.

4,266,716

CARTON WITH PYRAMID-SHAPED BOTTOM AND BLANK FOR FORMING SAME

John J. Austin, LeGrange, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Jan. 24, 1980, Ser. No. 115,021
Int. Cl.³ B65D *5/10, 5/36*
U.S. Cl. 229—39 R **10 Claims**



1. A carton comprising:

first, second, third and fourth side wall panels hingedly coupled to adjacent side edges thereof along fold lines, said side wall panels having top and bottom edges; and

a collapsible, pyramid-forming bottom structure hingedly coupled to said bottom edges along fold lines, said structure comprising,

first, second, third and fourth bottom panels hingedly attached along fold lines to said first, second, third and fourth side wall panels, respectively, each of said bottom panels being generally triangular and having bases attached to one of said side wall panels, and two side edges,

means for hingedly coupling said first and second bottom panels and said third and fourth bottom panels, respectively, along respective adjacent side edges thereof, and

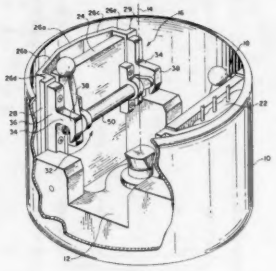
first and second locking tabs extending from said second and fourth bottom panels, respectively, said tabs having abutment edges for abutting each other to retain the carton in an assembled configuration against a bias of the carton towards a collapsed configuration.

4,266,717

PLATEN, HOLDER AND LATCH ASSEMBLY FOR SECURING PLATENS IN PLACE WITHIN A CENTRIFUGE DEVICE

C. Michael Jennings, Reston, Va.; Albert Kitchenham, Laurel, and Rene Lamadrid, Bethesda, both of Md., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 29,742, Apr. 13, 1979, Pat. No. 4,195,766. This application Dec. 12, 1979, Ser. No. 102,747
Int. Cl.³ B04B *7/12*
U.S. Cl. 233—26 **19 Claims**



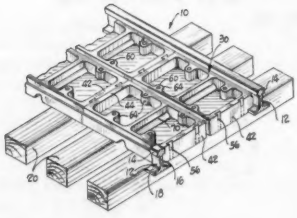
1. In a centrifuge of the type wherein a receptacle is received and held between first and second platens which are held in generally upright respective inner and outer parallel planes spaced radially outwardly from a vertical axis of rotation of the device with the first platen being situated in the inner plane and the second platen being fixed in the outer plane, the improvement comprising a platen holder and latch assembly including a holder having a fixed outer wall and a movable inner wall pivotally mounted to the bottom of said fixed outer wall, a first platen positioned in said holder against said inner wall and movable therewith, a second platen positioned within said holder against said outer wall, said platens being removable, replaceable platens which are slidably insertable into said holder from the top thereof, and a latch mechanism associated with said inner and outer walls of said holder and having means providing a toggle locking between said inner and outer walls.

4,266,718

MODULARIZED RAILWAY CROSSING GRADE AND MODULES THEREFOR

Robert L. Sivon, Perry, Ohio, assignor to True Temper Corporation, Cleveland, Ohio

Filed Jul. 27, 1978, Ser. No. 928,540
Int. Cl.³ E01C *9/04*
U.S. Cl. 238—9 **12 Claims**



1. A module for cooperative installation with a plurality of similar modules proximate a set of railway tracks and borne upon support members therefor to yield a modularized railway crossing grade assembly, said module comprising:

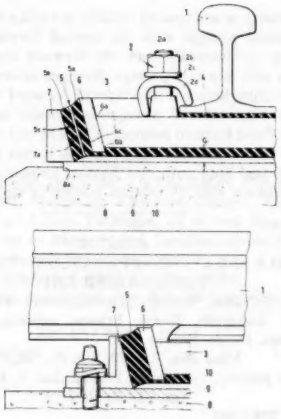
(a) a hollow form having exterior side walls, end walls, and a bottom wall;
(b) anchoring means for securing said hollow form to rail supports for a set of railway tracks;
(c) keyway means formed in a first of said end walls;
(d) key means formed in the second, opposing end wall, said key and keyway means being of complementary geometrical configuration whereby successive forms may be positively interlocked; and
(e) a cover plate secured to said module.

4,266,719

TRACK MOUNTING ASSEMBLY AND SOUND-DAMPING SYSTEM THEREFORE

Hermann Ortwein, Cologne, and Hans Braitsch, Bergisch Gladbach, both of Fed. Rep. of Germany, assignors to Clouth Gummiwerke Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Jun. 28, 1979, Ser. No. 52,974
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1978, 2828713; Jul. 27, 1978, 2832989
Int. Cl.³ E01B *9/38, 19/00*
U.S. Cl. 238—283 **6 Claims**



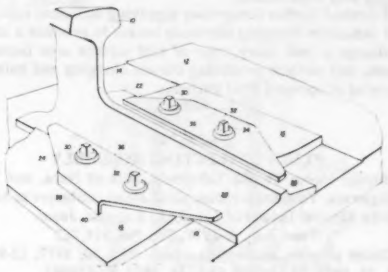
1. A sound-damping mounting for a rail upon a rigid body, comprising:
a frame supported on said body and elongated in a direction transverse to said rail while lying below said rail, said frame being composed of rigid material and having elements forming a continuous periphery around an opening, at least some of said elements extending generally transverse to said rail, said elements having flanks including an angle with the vertical between 5° and 85° and inclined upwardly and outwardly;
a rigid member underlying said rail and having at least a portion received in said opening and of a shape geometrically similar to that of said opening with flanks parallel to the corresponding flanks of said opening but spaced therefrom;
at least one rubber-metal plural-layer sound-damping member disposed between the spaced apart flanks of said rigid member and said frame while bridging the space between them and having its layers inclined at said angle, said rubber-metal sound-damping member extending at least along the elements generally transverse to said rail; and
means for securing said rail to said rigid member.

4,266,720

RAIL FASTENER

John L. Harmsen, Vienna, Va., assignor to Stedef S.A., Saint-Cloud, France

Filed Dec. 20, 1979, Ser. No. 105,856
Int. Cl.³ E01B *9/30*
U.S. Cl. 238—349 **16 Claims**



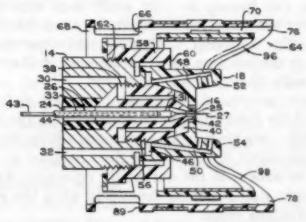
1. A rail fastening clip for securing a rail to a rail tie having the capacity to dampen and distribute load and vibrations along the contact surface between the rail and clip and through the area of the clip comprising a generally trapezoidal shaped springsteel clip having a long edge for engaging the foot of the rail, said long edge having an arched sinusoidal configuration which when installed by flattening the sinusoidal configuration against the foot of a rail subsequently dampens high frequency vibrations by engaging said foot of said rail with the ends and center of said long edge and dampens low frequency vibrations by engaging said foot of said rail with said ends, said trapezoidal shaped springsteel clip having a short edge, said short edge curved to terminate in a support foot disposed at an angle of about 90° to said trapezoidal shaped clip.

4,266,721

SPRAY APPLICATION OF COATING COMPOSITIONS UTILIZING INDUCTION AND CORONA CHARGING MEANS

James E. Sickles, Glenshaw, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 17, 1979, Ser. No. 75,933
Int. Cl.³ B05B *5/02*
U.S. Cl. 239—3 **4 Claims**



1. A method of applying a sprayable liquid coating composition to a workpiece, said composition having an electrical conductivity between about 0.005 and about 0.06 μmho/cm, said method comprising spraying said composition by employing a spray gun having:
(a) a gas nozzle and a fluid nozzle, each of said nozzles being in cooperative spatial relationship with each other to cause a fluid stream of said composition issuing from said fluid nozzle to be atomized and sprayed as fluid particles by gas issuing from said gas nozzle,
(b) electrically grounded means for increasing surface area

from which fluid particles can be formed, said means being disposed within said fluid stream and having at least one sharp edge, and

(c) induction charging electrode means disposed adjacent said gas and fluid nozzles and having a rear edge located rearward of a plane which is perpendicular to the axis of liquid flow and which passes through the discharge point of said fluid nozzle;

said method further comprising supplying sufficient voltage to said induction charging electrode means to produce a corona discharge at said sharp edge of said surface area increasing means, said method producing corona charging and induction charging of sprayed fluid particles.

4,266,722

FLUID DEFLECTING ASSEMBLY

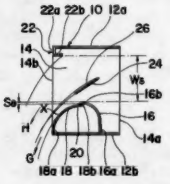
Motoyuki Nawa; Yutaka Takahashi, both of Nara, and Norio Sugawara, Yamatokoriyama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Aug. 4, 1978, Ser. No. 931,282

Claims priority, application Japan, Aug. 10, 1977, 52-95904; Oct. 24, 1977, 52-128037; Oct. 24, 1977, 52-128041

Int. Cl.³ B05B *1/04*

U.S. Cl. 239—590.5 **1 Claim**



1. A fluid deflecting assembly which comprises:

a fluid duct having supply and exit openings defined at respective ends of said fluid duct and through which a fluid medium flows from the supply opening towards the exit opening;

means defined at a position adjacent the exit opening for directing a portion of the fluid medium flowing through the fluid duct to flow inwardly of said fluid duct;

a guide wall structure having an outwardly diverging wall area adjacent the exit opening, said outwardly diverging wall area diverging outwards in a direction downstream with respect to the direction of the flow of the fluid medium, said guide wall structure further having a separating region and having an inlet guide wall area positioned adjacent the supply opening in opposed relation to the outwardly diverging wall area, said separating region being at the junction between the inlet wall area and the outwardly diverging wall area; and

a pivotally supported deflecting blade for deflecting the flow of the fluid medium flowing through the fluid duct, said deflecting blade being positioned within the fluid duct for controlling the stream of fluid medium to cause the latter to adhere to the outwardly diverging wall area of the guide wall structure depending upon the position of the deflecting blade.

4,266,723

NOZZLE FOR INJECTION MOLDING MACHINES

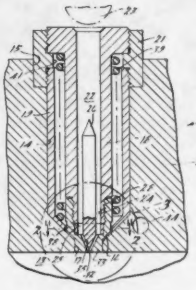
Jesus M. Osuna-Diaz, Rochester, Mich., assignor to Incoe Corporation, Troy, Mich.

Filed Nov. 2, 1979, Ser. No. 90,522

Int. Cl.³ B05B *13/00*

U.S. Cl. 239—132 **16 Claims**

1. An injection molding machine nozzle mountable in a mold die, comprising an elongated body having a central material passage therethrough, a cap removably mounted at the forward end of said body, the forward end of said cap being tapered forwardly, a heater surrounding and in heat exchange relation with said body and the rearward portion of said cap, a torpedo member fixedly mounted in said cap, said torpedo member being in heat exchange relation with said body and coactive therewith to maintain material in said central passage in a liquid, flowable condition, said torpedo member having tapered forward and rearward end portions and a radially outwardly extending mounting portion at the forward end thereof fitting snugly in and in heat exchange relation with and supported by said cap, said torpedo being disposed substan-



tially entirely in and spaced radially inwardly from the wall of said material passage with the tapered forward end thereof extending downwardly into the forward end of said cap, whereby said material passage diverges around said torpedo and converges between said tapered forward torpedo portion and said cap, material passageway means in the mounting portion of said torpedo member, a bore in said mold die having a tapered forward end, and mounting means positioning said nozzle in said bore with said tapered forward cap portion in spaced relation with the tapered portion of said mold die bore.

4,266,724

MOBILE SPRAYING APPARATUS WITH AN AXIAL PIPE-CARRIER DRUM

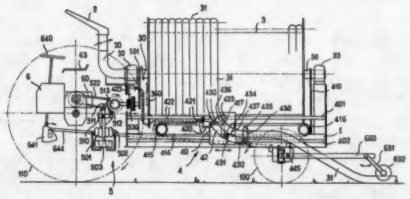
Hugo R. DiPalma, "Cavalle", Duras, France (47120), and Francis C. Aubarede, Duras, France, assignors to Hugo R. DiPalma, Duras, France

Filed Jun. 7, 1979, Ser. No. 46,312

Claims priority, application France, Jun. 7, 1978, 78 17028

Int. Cl.³ B05B *3/18*

U.S. Cl. 239—195 **16 Claims**



1. In a vehicular spraying apparatus having a wheeled vehicle chassis displaceable along a given direction and a spray-producing element carried by the vehicle chassis, the element communicating through an elongated flexible pipe to a source of water, the pipe being dispensed from the vehicle chassis and taken up on the chassis in response to movement of the chassis relative to the source, the improvement comprising:

a reel carried by the chassis and being mounted for rotation thereon to dispense and take up the pipe, the axis of rotation of the reel being disposed substantially along the direction of motion of the chassis, the reel and vehicle

moving together along the same path during dispensing and taking up of the pipe;

reeling guide means carried by the chassis for controlling the winding movement of the pipe from and onto the reel, the reeling guide means including a carriage which engages the pipe and is displaceable relative to the chassis in a direction substantially parallel to the axis of rotation of the reel in response to the rotary motion of the reel in order to vary the location on the reel at which the pipe winds from and onto said reel so that the pipe is disposed on the reel in regular layers;

means for sensing the pulling force on the pipe;

means for driving the apparatus and the reel in order to adjust the length of the pipe which is unwound between the source and the apparatus when said apparatus is moving, said driving means being responsive to said sensing means to vary the driving rate of the reel with respect to that of the apparatus; and,

pipe-guide means for defining a curved path along which the pipe moves when being dispensed from the reel, the path passing from a direction substantially perpendicular to the axis of the reel at the location where the pipe leaves the reel to a direction which is substantially parallel to the direction of motion of the apparatus as the pipe is dispensed from the apparatus.

4,266,725

EXHAUST SECTION OF A REACTION ENGINE

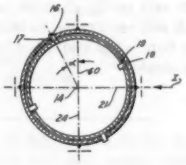
Ludwig Schweiki, Moosburg; Christian Greune, Füstenfeldbruck, and Paul Lottes, Puchheim, all of Fed. Rep. of Germany, assignors to Motoren-und Turbinen-Union Munchen GmbH, Munich, Fed. Rep. of Germany

Filed Oct. 9, 1979, Ser. No. 83,069

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1978, 2845149

Int. Cl.³ B64C *15/00*

U.S. Cl. 239—265.19 **14 Claims**



1. An exhaust section of a reaction engine comprising:

(a) a fixed pipe,

(b) a nozzle pipe carried by the fixed pipe,

(c) two diametrically opposed pins projecting from each pipe, each pin being angularly spaced 90° from the pins of the other pipe,

(d) two diametrically opposed slots in each pipe, each pin being located in a slot in the pipe other than the pipe which carries that pin, and

(e) a plurality of actuating elements each extending between and pivoted to the exteriors of both pipes, the actuating elements being adjustable longitudinally to pivot the nozzle pipe with respect to the fixed pipe so as to alter the relative axial positions of the two pipes.

4,266,726

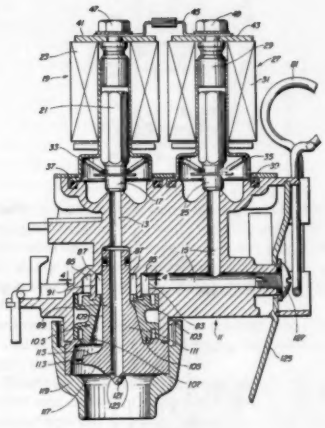
FLOW VALVE ARRANGEMENT FOR BEVERAGE DISPENSER

Wade R. Brown, St. Charles, Ill., and Werner Mannhardt, Detroit, Mich., assignors to Alco Foodservice Equipment Company, Miami, Fla.

Filed Apr. 11, 1979, Ser. No. 29,140

Int. Cl.³ B67D *5/56*

U.S. Cl. 239—406 **7 Claims**



1. A valve arrangement for apparatus having relatively fast flow of a diluent to be mixed with a syrup for dispensing a mixed beverage comprising:

a body member;

a diluent passage formed in said body member for receiving and conveying pressurized diluent;

a diluent valve to selectively block or permit diluent flow through said diluent passage;

a syrup passage formed in said body member for receiving and conveying syrup;

a syrup valve to selectively block or permit syrup flow through said syrup passage;

a syrup tube to receive syrup from said syrup passage and convey the syrup to a location for mixing with the diluent;

depressurizing means located at the end of said diluent passage to lower the pressure of diluent that flows from said diluent passage, said diluent passage and said diluent valve being designed to minimize the pressure drop prior to said depressurizing means;

a diffuser element adapted to fit over said syrup tube, said diffuser element having a frusto-conical interior cavity;

a diffuser opening formed between said diffuser element and said syrup tube to convey diluent from said depressurizing means to the smaller end of said frusto-conical cavity; and

a protruding shoulder formed on said syrup tube beyond the large end of said frusto-conical cavity, the upper portion of said shoulder being shaped to impede diluent flow sufficiently to fill with diluent the space between the surface of said diffuser element forming said frusto-conical cavity and the outer surface of said syrup tube, the lower portion of said shoulder being shaped to decrease the velocity of the diluent to a desired value.

4,266,727

DOUBLE-NEEDLE INJECTION-VALVE

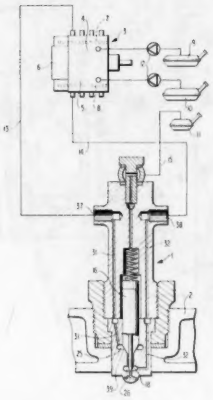
Robert Happel, Waiblingen, and Hans J. Haepp, Stuttgart, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Dec. 19, 1978, Ser. No. 971,001

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1977, 2758057

Int. Cl.[3] F02M *61/04*

U.S. Cl. 239—409 13 Claims



1. An injection valve for high-pressure injection of liquid fuel into a working chamber means of an internal combustion engine, the injection valve comprising a pair of axially spaced pressure chamber means for accommodating a quantity of liquid fuel, means for communicating said pressure chamber means with each other, and means for controlling the communication between the spaced pressure chamber means and between the injection valve and the working chamber means including first and second valve seat means, a valve needle means having a pair of valve sealing means adapted to cooperate with the respective valve seat means, and means for normally biasing said valve needle means in a closing direction such that the sealing means are forced into engagement with the respective valve seating means, the valve needle means being adapted to be displaced in an opening direction opposite a flow direction effective in an injection process by hydraulic pressure of the liquid fuel to be injected such that the pressure chamber means are in communication with each other, characterized in that separate line means are provided for connecting the injection valve with two separate sources of liquid fuel, separate means are provided for communicating each of the pressure chamber means with only one of the connecting line means, the valve needle means includes two valve needles disposed concentrically one within the other, each of the pressure chamber means having diameter which is larger than a diameter of the respective valve seat means and respectively surrounding the two valve needles, and in that pressure means are provided for causing the two valve needles to open and close simultaneously, such pressure means comprising the opening pressures experienced in the spaced pressure chamber means.

4,266,728

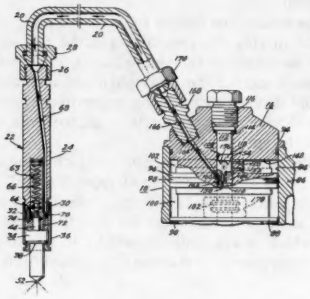
LEAKLESS FUEL INJECTION NOZZLE AND HOLDER ASSEMBLY

James R. Voss, Wilbraham, and Richard E. Vanderpoel, Granby, both of Mass., assignors to Ambac Industries, Incorporated, Springfield, Mass.

Filed Dec. 22, 1978, Ser. No. 972,517

Int. Cl.[3] F02M *47/02*

U.S. Cl. 239—533.6 9 Claims



1. In a leakless fuel injection nozzle and holder assembly comprising a nozzle having a bore therein, a valve slidably disposed within said nozzle bore and actuatable by high pressure fuel introduced into a chamber defined by said bore and said valve for movement of said valve from a closed to an open position, a fixed volume spring chamber without leak-off ports in said holder, valve stop means between said nozzle bore and said spring chamber for limiting the opening movement of said valve, a compression spring in said spring chamber, and means extending through said stop means connecting said spring with said valve to bias said valve toward a closed position, said spring chamber being closed to fluid entry except for leakage fuel passing thereinto from between said valve and nozzle bore, said spring chamber being subject to a sealing closure preventing entry of leakage fuel thereinto when said valve is in the open position by engagement of said valve with said valve stop means, the improvement comprising means for preventing the sealing closure of said spring chamber when said valve is in the open position, said means comprising passage means continuously connecting the end of said nozzle bore adjacent said stop means with said spring chamber whereby leakage fuel may pass through said passage means into said spring chamber from said nozzle bore when said valve is in the open position against said stop means.

4,266,729

INJECTION VALVE FOR FUEL INJECTION SYSTEMS

Günther Kulke, Esslingen, and Waldemar Hans, Bamberg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 11, 1979, Ser. No. 83,698

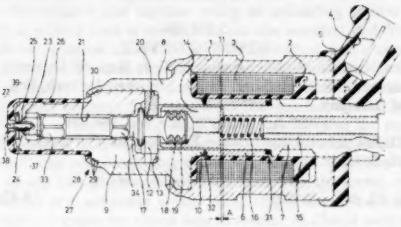
Claims priority, application Fed. Rep. of Germany, Jan. 4, 1979, 2900176

Int. Cl.[3] B05B *1/32*

U.S. Cl. 239—533.12 6 Claims

1. An injection valve for fuel injection systems in internal combustion engines including a nozzle body having a valve seat, means defining an ejection opening in said valve seat, a nozzle needle arranged to cooperate with said means defining said opening in said valve seat, said nozzle needle further including a corrosion-resistant needle tip which projects

through said ejection opening, further wherein said needle tip and said nozzle needle are formed of different materials and



embodied as independent parts firmly connected with one another.

4,266,730

SPRAY DEVICE

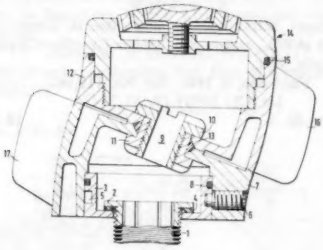
Klaus Grohe, Schiltach, Fed. Rep. of Germany, assignor to Hans Grohe GmbH & Co. KG, Schiltach, Fed. Rep. of Germany

Filed May 3, 1979, Ser. No. 35,565

Claims priority, application Fed. Rep. of Germany, May 5, 1978, 2819623

Int. Cl.³ B05B *1/18, 15/08*

U.S. Cl. 239—587 **22 Claims**



1. A spray device having an attachment member for connecting the device to a stationary water supply and a spray head for discharging the water, comprising:

at least two wedge-shaped connecting members, each having at least one wedge surface, the wedge-shaped connecting members being rotatably connected to one another along a plane, to the wedge surfaces of adjacent connecting members;

one of the wedge-shaped members being rotatably connected to the attachment member;

another of the wedge-shaped members having the spray head mounted thereon; and,

the attachment member and the wedge-shaped members providing communicating water passages between the stationary water supply and the spray head, whereby the spray head may be tiltably adjusted toward and away from the attachment member.

4,266,731

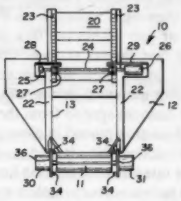
DUMP SPREADER

Charles S. Musso, Jr., Bath, N.Y., assignor to Air-Flo Manufacturing Co., Inc., Prattsburg, N.Y.

Continuation-in-part of Ser. No. 36,771, May 7, 1979, abandoned, which is a continuation-in-part of Ser. No. 966,202, Dec. 4, 1978, abandoned. This application Oct. 11, 1979, Ser. No. 83,688

Int. Cl.³ A01C *19/00*; E01C *19/20*

U.S. Cl. 239—676 **3 Claims**



1. A dump spreader truck body having hopper-shaped side walls sloping downward to a wide bottom conveyor that can drive at different speeds and extends beyond a rear end of said body, said dump spreader comprising:

a. a single rear door for both dumping and spreading material from said body;

b. a fixed rear wall connected between said side walls at said rear end of said body and extending vertically to provide support for said rear door;

c. said fixed rear wall having an opening approximately the width of said conveyor and extending vertically from said conveyor upward to about one-half to three-quarters of the height of said rear wall;

d. said door being large enough to close said opening and being mounted for vertical movement on said rear wall over said opening;

e. a hydraulic drive powerful enough for moving said door vertically against the resistance of material loaded in said body or lying on said conveyor under said door after partially dumping material from said body; and

f. said hydraulic drive being operable for setting said door at variable low heights above said conveyor for metering the flow of said material from said body during spreading and for raising said door above the top of said fixed rear wall for fully opening said opening for dumping material quickly.

4,266,732

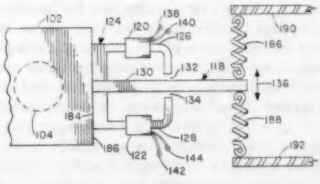
VARIABLE REACTANCE ALIGNMENT DETECTOR AND CONTROL

David M. Sage, and George E. Sage, both of 22002 Fall City Rd., Redmond, Wash. 98052

Continuation of Ser. No. 893,345, Apr. 4, 1978, abandoned. This application May 19, 1980, Ser. No. 151,166

Int. Cl.³ B05B *3/00*; H01F *21/06*; G08C *25/00*

U.S. Cl. 239—720 **10 Claims**



1. In a mobile irrigation apparatus of the type having an elongated fluid distribution means including a plurality of

articulating sections, a drive means associated with one of said sections for propelling said one of said sections and an alignment control means associated with the drive means for maintaining a substantially, aligned relationship between the propelled section and an adjacent section, said alignment control means including a drive control means responsive to an input signal from said alignment control means indicative of the angular relationship between the propelled section and the adjacent section to maintain a predetermined angular relationship the improvement wherein the alignment control means comprises a variable inductance comprising at least one inductive coil, a core forming a closed loop flux path for the coil having only one air gap within the flux path, the core having a base element, a first lateral element connected to the base element, a second lateral element connected to the base element, said coil being mounted on one of said lateral elements, the second lateral element spaced from the first lateral element and having an end portion placed in close proximity to the first lateral element to define the air gap and the second lateral element having an intermediate portion between its end and its connection to the base element which is spaced more distantly from the first lateral element than its end portion, one of either of said lateral elements being deflectable with respect to each other in response to angular variation between said propelled and adjacent sections to vary the size of the air gap and hence vary the inductance, said alignment control means being mechaically linked to said respective propelled and adjacent sections.

4,266,733

REPLACEABLE LINER FOR THE DISCHARGE ASSEMBLY OF A ROTARY GRINDING MILL OR THE LIKE

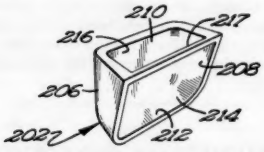
William J. Butler, 732 Old Howard Millroad, Duluth, Minn. 55804

Division of Ser. No. 886,092, Mar. 13, 1978, Pat. No. 4,172,560. This application Aug. 13, 1979, Ser. No. 66,253

The portion of the term of this patent subsequent to Oct. 30, 1996, has been disclaimed.

Int. Cl.³ B02C *17/18*

U.S. Cl. 241—171 **20 Claims**



1. In a discharge assembly adapted to be mounted inside the discharge end of a rotary grinding mill or the like comprising tiers of discharge castings extending circumferentially of the grinding mill or the like, with the discharge castings including outer, intermediate, and inner discharge castings, with the outer casting including a grate provided with passages and the inner discharge castings forming a discharge cone, the improvement comprising a replaceable liner for insertion into the discharge castings comprising, in combination: an inner most box member for installation in the discharge castings forming the discharge cone, with the inner most box member including a first closed side having an inside surface and an outside surface, a second closed side having an inside surface and an outside surface, a first open end, a second open end, a closed top having an inside surface and an outside surface, and a closed bottom having an inside surface and an outside surface, with the inner most box member further including a discharge outlet having an open bottom and a closed top, with the discharge outlet being formed by the closed top of the inner most box member extending beyond the first open end of the inner most box member and terminating in a curved portion which follows and protects the castings forming the discharge cone.

4,266,734

WINDING DEVICE

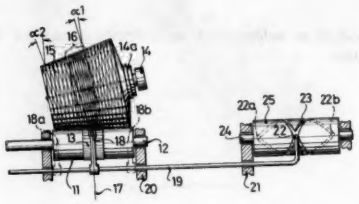
Hans Raasch, Mönchengladbach, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Mönchengladbach, Fed. Rep. of Germany

Filed Jul. 18, 1977, Ser. No. 816,689

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1976, 2632014

Int. Cl.² B65H *54/46, 54/28*

U.S. Cl. 242—18 DD **5 Claims**



1. In a winding device for a conical cross-wound coil wherein the coil is driven by peripheral friction applied to a predetermined part of the length thereof constituting a friction zone by a drive roller extending along the entire length in the coil, and the thread that is to be wound on the coil is fed thereto by a thread guiding member, means for traversing the yarn across the coil so as to produce a cross-wound coil, means for reducing the angle at which the wound threads cross on the cross-wound coil in the friction zone with respect to the thread crossing angle outside the friction zone.

4,266,735

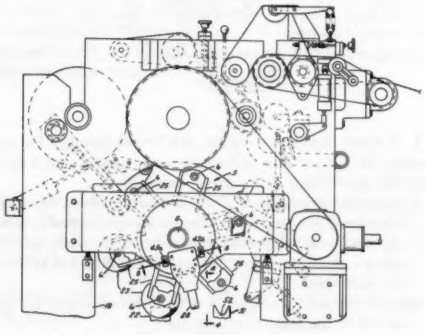
MANDREL SUPPORTS FOR AUTOMATIC WEB REWINDER

Dale D. Leanna, Little Suamico, and Allen R. Jorgensen, Abrams, both of Wis., assignors to Magna-Graphics Corporation, Oconto Falls, Wis.

Filed Feb. 8, 1980, Ser. No. 119,962

Int. Cl.³ B65H *19/20, 75/34*

U.S. Cl. 242—56 A **10 Claims**



1. An automatic web rewinding machine comprising a turret rotatable about an axis, a core supporting mandrel having at one of its ends a rotatable connection with the turret that provides for cantilevered support of the mandrel in laterally spaced parallel relation to said axis, an indexing mechanism that imparts indexing rotation to the turret whereby the man-

drel is carried to each in turn of a succession of fixed stations, at each of which the mandrel dwells for a time, one of said stations being a loading station whereat a tubular core is loaded onto the mandrel and another being an unloading station at which a wound core is removed from the mandrel and from which the mandrel moves to the loading station, and a chuck arm constrained to rotate with the turret but movable relative thereto between a closed position in which the chuck arm supportingly engages the other end of the mandrel and an open position in which the chuck arm is disengaged from the mandrel to permit cores to be moved axially onto and off of the mandrel, said web rewinding machine being characterized by:

A. chuck arm actuating means rotatable with the turret, said chuck arm actuating means being responsive to a closing input to cause the chuck arm to assume its closed position and being responsive to an opening input to cause the chuck arm to assume its open position;

B. unloading station input means comprising

(1) a position sensor responsive to position of the turret and

(2) a first input element at a location on the machine that is fixed in relation to said stations, said input element being operatively associated with said position sensor and being located and arranged to deliver an opening input to said chuck arm actuating means when the mandrel is established at the unloading station;

C. a core detector arranged to produce an output when a core is properly loaded onto a mandrel at the loading station; and

D. a second input element operatively associated with said core detector and located in spaced relation to said first input element, said second input element being arranged to deliver a closing input to the chuck arm actuating means in response to an output from said core detector issued when the mandrel is at the loading station.

4,266,736

METHOD AND APPARATUS FOR THE MODULATED RAISING OF THE CARRIAGES OF A WIND-UP ROLL IN THE CENTERLESS WINDING OF WEBS

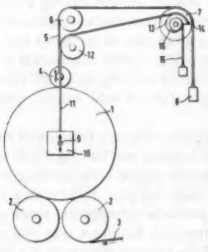
Herbert Schonmeier, Dusseldorf, Fed. Rep. of Germany, assignor to Jagenberg Werke AG, Dusseldorf, Fed. Rep. of Germany

Filed Dec. 6, 1979, Ser. No. 100,777

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1978, 2853548

Int. Cl.³ B65H *17/08*

U.S. Cl. 242—66 **5 Claims**



1. In a method for the centerless winding of webs of the type wherein a pressure cylinder lies on a wind-up roll having stub shafts inserted in its core and mounted on movable carriages and the vertical displacement of the carriage is modulated, the improvement wherein the modulation of the movement of the carriages comprises coupling the vertical movement of the carriages with the upward movement of the pressure cylinder such that the carriages follow that movement to a degree corresponding to the momentary degree to which the wind-up roll has been wound.

4,266,737

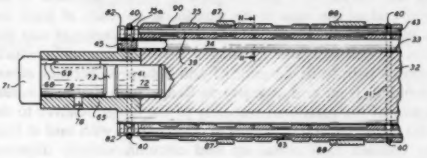
AIR DIFFERENTIAL MANDREL AND METHOD OF DIFFERENTIALLY WINDING AND REWINDING TAPES

Elvin A. Mastriani, Roseland, N.J., assignor to Arrow Converting Equipment, Inc., Fairfield, N.J.

Filed Nov. 5, 1979, Ser. No. 91,504

Int. Cl.³ B65H *75/24, 19/04*

U.S. Cl. 242—72 B **36 Claims**



1. A differential mandrel for rewinding tapes, from a source, onto a mandrel, on rotation of said mandrel, comprising:

(a) an elongated mandrel body member,

(b) a slotted portion formed therein and opening circumferentially outwardly thereof,

(c) said slotted portion extending axially along a substantial portion of the mandrel body, and having a closed inner end;

(d) flexible, elastic elongated tubular pressure medium means disposed on the inner end of said slotted portion of the mandrel,

(e) tape winding spools contiguously disposed on said mandrel relative to said pressure means and in contact therewith,

(f) said tape winding spools having axially disposed openings therein,

(g) elongated alignment means positioned in said spool openings and aligning said spools in line in a row along the longitudinal axis of the mandrel,

(h) said alignment means having a cross sectional dimension substantially smaller than that of the tape winding spools whereby the latter vertically freely float on the alignment means,

(i) said alignment means aligning said spools for registration with said pressure means in said mandrel slotted portion of the mandrel,

whereby tapes may be wound onto said spools, under constant tension, on rotation of the mandrel, notwithstanding caliper variations in the tapes.

4,266,738

TAPE REEL

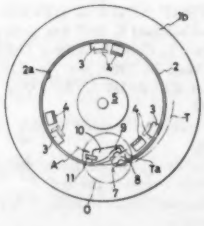
Akira Nakagawa, Tokyo, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Nov. 14, 1979, Ser. No. 94,006

Claims priority, application Japan, Nov. 22, 1978, 53/159951[U]

Int. Cl.³ B65H *75/28*

U.S. Cl. 242—74.1 **4 Claims**



1. In a tape reel of the rotational assemblage type including two flanges, and a generally hollow hub supporting said

flanges in spaced relation, at least one of said two flanges being formed separately from said hub, said at least one flange and said hub each having cooperative engaging means such that assembly of said at least one flange to one end of said reel hub and rotation of said at least one flange relative to said hub establishes tight engagement between the cooperative engaging means, a generally radially disposed slot communicating between the external circumferential surface of said reel hub and its interior, said slot adapted to permit insertion of the inner end of the tape to be wound on the hub, at least one resilient wall blocking radial access to the interior of said hub through said slot and forming a tortuous circumferentially disposed path to the interior of said hub, protuberance means depending from said at least one flange such that as a consequence of the rotational assembly of the flange relative to the hub said protuberance means in cooperation with said at least one resilient wall closes up said circumferentially disposed path and captures said inner end of the tape inserted therein.

4,266,739

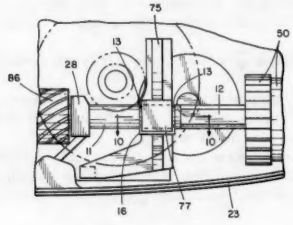
CLIP FOR FISHING REEL

Roy E. Stiner, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.

Continuation of Ser. No. 932,464, Aug. 10, 1978, abandoned. This application Feb. 5, 1980, Ser. No. 118,749

Int. Cl.³ A01K *89/01*

U.S. Cl. 242—84.21 R **2 Claims**



1. A retaining clip for attachment to a shaft having spaced undercut grooves, the clip comprising:

(a) a pair of C-shaped washers, each washer having a pair of resilient bifurcated spring legs and a central base support located near the interior center of the C-shape and supports at the interior terminuses of the legs of the C-shape, each leg being biasably positioned with respect to the base support, the terminus of each leg extending circumferentially more that 90° from the central support; and,

(c) a resilient tie bar connecting the washers near the central base supports and at the exterior thereof, the resilient tie bar permits the individual positioning of each C-shaped washer into the undercut groove with the terminuses and the base support in substantial contact with the grooves.

4,266,740

STRAP WINDING DEVICE

Gary A. Ramos, and Michael E. Dell'Ara, both of Willets, Calif., assignors to Gerald T. Colwell, Willets, Calif., a part interest

Filed Mar. 10, 1980, Ser. No. 128,935

Int. Cl.³ B65H *17/46, 17/52*

U.S. Cl. 242—86.52 **6 Claims**

1. A device for coiling elongated flexible belts comprising:

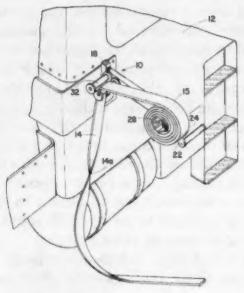
a frame member;

a reel rotatably mounted on said frame member; and extending laterally from one side thereof;

a crank for rotating said reel extending from the other side of said frame member;

a pair of parallel guide (members) rollers extending laterally from said one side and forming between them a guide slot aligned with and parallel to the axis of said reel;

said guide slot being narrower than the width of a belt to be wound on said reel to prevent twisting thereof, and



a member pivotally mounted on the outboard end of one of said rollers and conditioned to be pivoted for selectively clearing and blocking the space between said rollers.

4,266,741

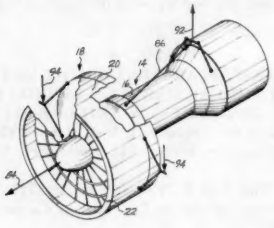
MOUNTING APPARATUS FOR FAN JET ENGINE HAVING MIXED FLOW NOZZLE INSTALLATION

Patrick Murphy, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed May 22, 1978, Ser. No. 908,080

Int. Cl.² B64D *27/00, 27/12*

U.S. Cl. 244—54 **8 Claims**



1. In a jet engine having a core engine section and a fan section, said core engine section having a core housing with a front portion, a rear portion and a longitudinal center axis, said fan section having a fan case at the front end of the core housing, said fan case being rigidly connected to the engine core housing and positioned radially outward therefrom,

a mounting apparatus for said engine, said apparatus comprising:

a. a main support structure positioned radially outwardly of the core housing and having a rear end proximate the rear end of the engine core housing and a forward end proximate said fan case and having two forward side mounting portions on opposite sides of said fan case,

b. a main thrust link having a rear end connecting to the rear end of the support structure at a first upper location spaced radially from said longitudinal center axis a greater radial distance, and a forward end connecting to the forward end of the core housing at a second location at a lesser radial distance from the longitudinal center axis of the engine core housing, in a manner that said main thrust link counteracts thrust loads developed by the engine by exerting a force having both a horizontal force component and a vertical force component,

c. a rear support device connecting between the rear portion of the support structure and the rear portion of the engine core housing at a third location spaced rear-

wardly a substantial distance from the second connecting location of the front end of the thrust link, said rear support device being arranged to resist both vertical and lateral loads,

d. two sets of tangent links, said sets being positioned on opposite sides of said fan case, each set comprising:

1. an upper link having a first end connected to a related one of said forward side mounting portions, with the upper link extending upwardly from its first end to a second end of the upper link, which second end is connected to said fan case at a related upper side portion of the fan case, said upper link having its first and second ends in a line generally tangentially aligned with said fan case so as to transmit substantially tangential loads into said fan case,

2. a lower link having a first end connected to said related one of said forward side mounting portions, with the lower link extending downwardly from its first end to a second end of the lower link, which second end is connected to said fan case at a related lower side portion of the fan case, said lower link having its first and second ends in a line generally tangentially aligned with said fan case so as to transmit substantially tangential loads into said fan case,

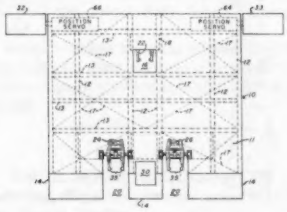
whereby with said engine operating to develop a substantial thrust generally along the longitudinal axis, and with this thrust being resisted by the thrust link in a manner to create a first force couple on said engine, said rear support device and said sets of tangent links create an opposite force couple, with the rear support device exerting its force on said rear engine portion, and with said sets of tangent links exerting their forces in a symmetrical pattern about the circumference of the fan case.

4,266,742

RAM WING AIRCRAFT LAUNCH PLATFORM SYSTEM

David J. Perez, Xenia, and Kenneth P. Schwartz, Fairborn, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 17, 1979, Ser. No. 85,662
Int. Cl.³ B64F *1/04*
U.S. Cl. 244—63 **4 Claims**



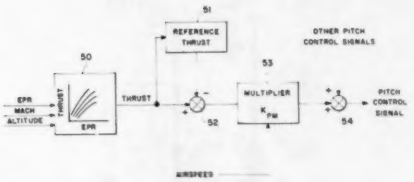
1. A platform launch system for aircraft having conventional wheel landing gear, comprising: a ram wing having a plurality of openings to permit the aircraft nose landing gear wheel and the aircraft main landing gear wheels to extend through the ram wing to contact the runway surface; means, supported on said ram wing, for securing the nose landing gear wheel to the ram wing; means, supported on said ram wing for securing the main landing gear wheels to the ram wing; means for releasing the nose landing gear wheel and the main landing gear wheels from the ram wing.

4,266,743

PITCH ATTITUDE STABILIZATION SYSTEM UTILIZING ENGINE PRESSURE RATIO FEEDBACK SIGNALS

Wendell W. Kelley, Newport News, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 28, 1979, Ser. No. 15,995
Int. Cl.³ G05D *1/08*
U.S. Cl. 244—182 **4 Claims**



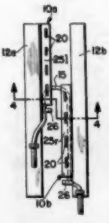
1. In an aircraft pitch control system in which several signals are summed by a summing means to form a pitch control signal that is used to control the aircraft about its pitch axis, means for including with said pitch control signal a pitch stabilization signal that will counteract the anticipated pitching moment caused by changes in the engine pressure ratio consisting of means for generating an engine pressure ratio signal, means for establishing a reference engine pressure ratio signal, means receiving said engine pressure ratio signal and said reference engine pressure ratio signal for producing a signal proportional to the difference of the two signals, means for multiplying said difference signal by a predetermined constant to produce said pitch stabilization signal and means for applying said pitch stabilization signal to said summing means.

4,266,744

CABLE AND HOSE GUIDE

Lawrence J. Bergman, Minster, Ohio, assignor to Crown Controls Corporation, New Bremen, Ohio

Filed Apr. 16, 1979, Ser. No. 30,393
Int. Cl.³ B66B *9/20*
U.S. Cl. 248—49 **6 Claims**



1. A cable and hose guide for guiding a cable or hose between two members which are longitudinally movable with respect to each other, comprising:

(a) means mounted on each member forming an extended channel having an opening defined by opposing side walls joined by a rear wall, and

(b) means forming a series of alternating staggered intrusions on said side walls spaced longitudinally of each other along said channels and extending into said opening such that said intrusions, side walls, and rear wall define pockets sized to receive a portion of the cable or hose, said pockets having cross sectional areas greater than that of the cable or hose so that the cable or hose can be retained within said pockets between said intrusions and said rear

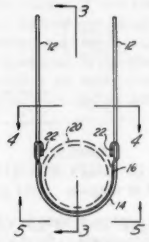
wall and can be fed into and fed out of said extended channels by being deflected around each of said longitudinally spaced intrusions in a serpentine manner.

4,266,745

PIPE HANGER

Harold D. Jones, 724 Hickorywood Dr., Flushing, Mich. 48433

Filed Nov. 23, 1979, Ser. No. 96,908
Int. Cl.³ E21F *17/02*
U.S. Cl. 248—58 **4 Claims**



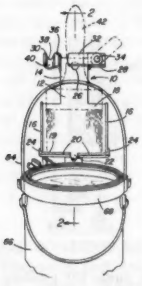
1. A pipe hanger for a relatively large size pipe, comprising:
a bendable wire portion having a pair of pointed end portions for anchoring it into a structural element;
an arcuate bend portion;
a bendable strap having a plurality of spaced perforations over a substantial portion of its length;
said strap having at least two of said perforations registered about said wire; and
a pair of crimped end portions of said strap for holding it against slippage and in place on said wire portion.

4,266,746

PAINT BRUSH,.PAD AND ROLLER HOLDER AND CAN CARRIER

William C. Klaiber, 601 York Rd., Fayetteville, N.C. 28303

Filed Jun. 6, 1979, Ser. No. 45,930
Int. Cl.³ B44D *3/12;* **B65D** *25/00*
U.S. Cl. 248—113 **4 Claims**



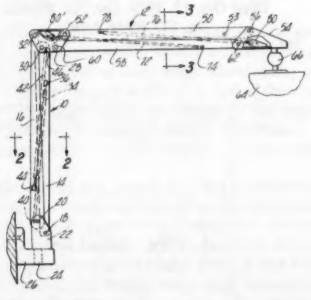
1. A wide elongated upstanding inclined support including front and rear sides and a lower elongated, transverse shelf projecting outwardly from and extending transversely from the front side of the support toward which the lower end of the support is inclined, said shelf including longitudinally spaced opposite end portions defining a drainage slot therebetween, said shelf opposite end portions being upwardly and outwardly inclined from said support, and mounting means carried by the lower end of said support below the shelf adapting the support for alternately mounting said support on the upper rim portion of a paint can, roller tray or paint box peripheral wall, the upper portion of said support defining a transversely narrowed upper end portion including opposite side tab portions projecting outwardly from the front side of said support, said tab portions being spaced apart a distance for receiving the upper portion of a paint brush handle therebetween, one of said tab portions including a pivoted latching lever supported therefrom and swingable in a plane generally paralleling said inclined support, said latching lever being swingable to a position bridging the spacing between said tab portions and for releasably retaining said paint brush handle between said tab portions, the other of said tab portions being reversely bent to define a channel extending longitudinally of the support and opening laterally outwardly of the front side of said support, said channel being adapted to receive the handle portion of a paint roller therein having the roller portion thereof supported from the forward portion of said shelf, said mounting means including a rearwardly and downwardly inclined mounting bracket portion carried by the lower end of said support, said mounting bracket portion terminating rearwardly in a forwardly bowed portion in turn terminating forwardly in a downwardly directed portion including a lower rearwardly directed flange spaced below said bowed portion, said downwardly directed portion defining a transverse rearwardly opening channel between said bowed portion and said rearwardly directed flange for receiving therein a clamp band clamped about the upper end of a paint can, said mounting means also including an elongated angulated latch flange pivotally supported at one end to the forward side of said rearwardly and downwardly inclined portion above said forwardly bowed portion and swingable into and out of position with the other end portion of said latch flange closely paralleling the front side of said downwardly directed portion and with said latch flange bridging across said forwardly bowed portion for clampingly engaging the upper reinforcing bead of one wall of a paint tray.

4,266,747

EQUIPOISED ARTICULATED SUPPORT ARM

James J. Souder, Jr., Ann Arbor; Edward D. Scarborough, Jr., Inkster, and Merlin D. Fox, Ann Arbor, all of Mich., assignors to Positioning Devices, Incorporated, Cincinnati, Ohio

Filed Jul. 26, 1979, Ser. No. 61,135
Int. Cl.³ E04G *3/00*
U.S. Cl. 248—280.1 **16 Claims**



1. In an equipoising mechanism for supporting an object at an infinite number of positions, said mechanism having a lower arm pivoted at its lower end to a base bracket and at its upper end to a floating backet, and an upper arm comprised of a pair of parallel links pivoted at one end to the floating bracket and at their other ends to a supporting bracket for the object, wherein the improvement comprises:
spring means coupled at one end to one of the links of the upper arm between the pivot points of that link;
connector means for attaching the other end of the spring to a point on said floating bracket; and
means on said floating bracket for altering the effective

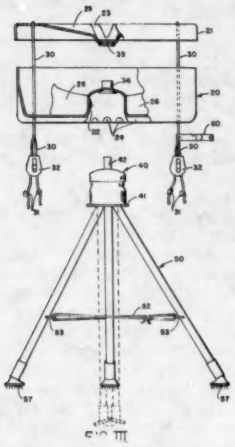
position of said spring attachment point relative to said bracket as said upper arm is moved wherein the mechanical advantage of the spring is adjusted to symmetrically equipoise the object at an infinite numbeer of positions.

4,266,748

PORTABLE SWIVEL HUNTER'S STOOL

Thomas P. Dalton, 6010 Kew Park, Manitou Beach, Mich. 49253

Filed Jun. 25, 1979, Ser. No. 52,026
Int. Cl.³ A47C *3/18*
U.S. Cl. 248—425 **38 Claims**



1. A horizontally swivable support comprising:
(A) a horizontally rotatable platform means having:
(1) a central bell-shaped socket having an apex and a rim; and
(2) separate smaller and larger diameter concentric axially spaced inside circular bearings attached inside said apex and said rim of said socket, respectively, said smaller bearing providing both vertical and horizontal bearing surfaces and said larger bearing providing a horizontal angular bearing surface; and
(B) pedestal means having:
(1) a bell-shaped plug having an apex and a rim removably seatable inside said socket and having separate outside vertically cylindrical and horizontal bearing surfaces at said plug apex and a horizontal angular bearing surface at said plug rim, respectively, for contacting said bearings, and
(2) leg means attached to inside of and projecting below said bell-shaped plug for supporting said platform so that it is completely rotatable with respect to said pedestal means.

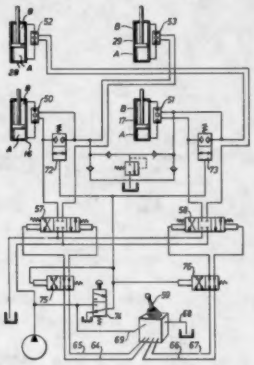
4,266,749

DRILL BOOM ARRANGEMENT

Axel L. Lundström, Hägersten, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Apr. 10, 1979, Ser. No. 28,712
Claims priority, application Sweden, Apr. 11, 1978, 7804053
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—652 **10 Claims**

1. A drill boom arrangement comprising a boom support (13), a boom (10) pivotally mounted at one end of said boom support, a feed beam (40) for a rock drill (41) pivotably mounted on the distal end of the boom, a first hydraulic cylinder (17) for pivoting the boom relative to the boom support, a second hydraulic cylinder (28) for pivoting the feed beam relative to the boom, a hydraulic circuit coupling said first and second cylinders in series, said circuit including a direction valve (58) connected to supply and to drain and operable to actuate said first and second cylinders to swing the boom and the feed beam simultaneously in opposite directions, and valve



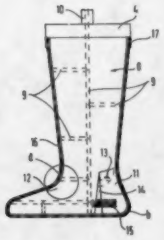
means (51) to lock said first cylinder in its position when not actuated through said direction valve, characterized by a valve (73) for short-circuiting said first cylinder (17) to permit operation of said second cylinder (28) by means of said direction valve (58) while said first cylinder remains in its position.

4,266,750

DEVICE FOR MANUFACTURING BOOTS AND THE LIKE OF ELASTOMERIC MATERIAL

Achille Gallizia, Milan, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

Filed Sep. 18, 1979, Ser. No. 76,756
Claims priority, application Italy, Sep. 21, 1978, 27908 A/78
Int. Cl.³ B29C *1/12*; B29D *3/02*
U.S. Cl. 249—65 **5 Claims**

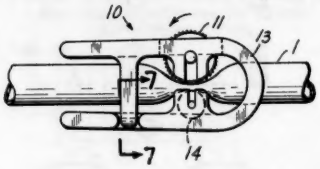


1. An apparatus for molding a boot or the like from an elastomeric composition and simultaneously lining the boot with a fabric on the inner boot surface, said apparatus comprising a mold formed by first and second shells each of which has a cavity shaped as the external form of one-half of the upper part of a boot, a third shell having an open cavity shaped as the sole of the boot and disposed at the bottom end of the first and second shells, and a rigid two-part core member having a shape corresponding to the shape of the interior of the boot, said two parts of the core member being pivotally movable with respect to each other, one of said two parts corresponding to the heel of the boot, and having a pivot near its upper edge, a spring biasing the said two parts apart from each other from a position below said pivot, said parts being spaced apart by a space which is widest near said spring.

4,266,751
STRIPPER CLAMP

David S. Akhavi, Los Angeles, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Apr. 2, 1979, Ser. No. 26,117
Int. Cl.[3] F16L 55/14
U.S. Cl. 251—6 3 Claims

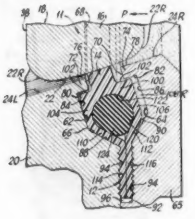


1. A stripper clamp mounted on a blood collection tube, wherein the clamp comprises: a generally U-shaped body having a pair of opposed arms; one arm having a first transverse roller mounted thereon and being confined within the space between the opposed arms; the opposite arm having a second transverse roller which protrudes through an opening in such second arm, and which second roller is adapted to be rolled by an operator's hand to move the clamp along the tube; said U-shaped body having an arm connecting portion located rearwardly of the rollers; locking means for securing the opposed arms together at a location forwardly of the rollers, said locking means including a pair of spring biased legs straddling the blood collection tube; and snap fit retaining means on the body for receiving the straddling spring biased legs and thereby clamping the opposed rollers about the blood collection tube.

4,266,752
SEAL STRUCTURE

Stephen A. Johnson, Fountain Valley, Calif., assignor to MCC Flowseal, a unit of Mark Controls Corporation, Huntington Beach, Calif.

Filed Mar. 30, 1979, Ser. No. 25,498
Int. Cl.[3] F16K 25/00
U.S. Cl. 251—173 14 Claims



1. A seal structure for providing fluid sealing between juxtaposed first and second members;

the first member having an annular peripheral sealing surface;

the second member having an annular surface surrounding and normally slightly spaced from the first member;

one of said members having an annular interior cavity of predetermined axial width with a radial slot defined by spaced apart radial end walls opening to its surface and which is narrower than the cavity;

the cavity including oppositely and axially extending underside shoulders adjacent the slot, parallel spaced interior side walls extending radially from the distal ends of the shoulders, radially extending and convergent interior side walls continuing from said respective first side walls, and a narrow anchoring groove extending from the ends of the convergent side walls;

an annular fluid seal ring of relatively rigid, flexible material, mounted in said cavity having a main body portion with parallel exterior side walls adjacent to but normally spaced from the cavity interior side walls and convergent exterior walls barely abutting the interior convergent walls of the cavity, the ring having an extension from the convergent walls into and sealed to the anchoring groove, the ring also having a tongue radially projecting through and movable in said slot and terminating in a seat engageable by the other of said members, external shoulders extending axially from the sides of the tongue to the ring side walls and having outside diameters normally somewhat smaller than those of the underside shoulders, the interior of the main body portion of the ring having an annular opening of generally circular cross-section;

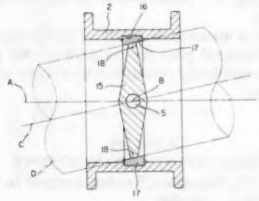
and a normally substantially tension-free elastomeric core of generally circular cross-section in said opening;

the dimensions of the cavity and seal structures being such that (1) when the seat is not engaged with the sealing surface, the two sets of shoulders abut with substantial force, the convergent walls of the ring and cavity abut or are in close proximity and the parallel sidewalls are spaced apart a short distance; (2) when the seat and sealing surface are engaged in the absence of fluid pressure the seal ring is radially compressed and the tongue is radially moved, the sets of shoulders separated, the convergent surfaces are forcibly abutted, and the main body portion and the elastomeric core are axially deformed and the resulting radial compression effects sealing between the first and second members, and thereafter, (3) when fluid pressure is applied, it has access past the shoulders to the upstream side space between the cavity and ring, the downstream side of the seal ring is brought into contact with the downstream side of the cavity along substantially its entire length, and the ring and elastomeric core are axially compressed to increase the sealing effect of the seat on the sealing surface.

4,266,753
BUTTERFLY VALVE

Yoshitsugu Okada, Hirakata, Japan, assignor to Kubota, Ltd., Osaka, Japan

Continuation of Ser. No. 732,846, Oct. 18, 1976, abandoned.
This application Jul. 20, 1978, Ser. No. 926,345
Claims priority, application Japan, Oct. 18, 1975, 50-125515; Oct. 18, 1975, 50-125516; Oct. 16, 1976, 51/124141
Int. Cl.[2] F16K 1/22
U.S. Cl. 251—305 8 Claims



1. A butterfly valve comprising:

a valve housing having a cylindrical fluid passage therethrough;

a disc shaped valve body having a hard annular rim of elliptical cross-sectional shape thereon extending in the plane of the valve body rotatable about an axis perpendicular to and intersecting the longitudinal axis of said fluid passage;

drive means to turn and lock said valve-body;

a hard annular vavle seat mounted in said housing;

said seat having an inner annular surface of elliptical cross-sectional shape extending in a plane perpendicular to the

longitudinal axis of said cylindrical fluid passage corresponding to the periphery surface of an imaginary cylinder having an axis lying at an angle to the longitudinal axis of fluid passage in the direction of rotation of said valve body, said peripheral surface defining a cross-section in said imaginary cylinder of elliptical shape, the axis of said cylinder intersecting the longitudinal axis of said fluid passage at the same point as the axis of rotation of said valve body, said rim on said valve body having inclined peripheral surface which in the closed position of the valve corresponds to and seals with the inner annular elliptical cross-sectional surface of said seat.

4,266,754

BUTTERFLY VALVE ASSEMBLY

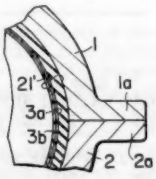
Youichi Ninomiya; Hirotoshi Ogawa; Tomoyuki Ueda, and Masataka Machida, all of Nobeoka, Japan, assignors to Asahi Yukizai Kogyo Co., Ltd., Nobeoka, Japan

Continuation of Ser. No. 868,292, Jan. 10, 1978, abandoned. This application Dec. 12, 1979, Ser. No. 102,919

Claims priority, application Japan, Apr. 1, 1977, 52-36077; Apr. 19, 1977, 52-44121

Int. Cl.³ F16K *1/226*

U.S. Cl. 251—306 **5 Claims**



1. A butterfly valve assembly comprising a stationary valve body having an axial fluid flow passage therethrough, a turnable valve member having a valve stem fixed thereto adapted for full opening, partial opening and full closing of said flow passage, and a valve seat ring having an inner protecting resin layer comprising a first layer of polyvinylidene difluoride and a second layer of polyethylene tetrafluoride covering said first layer, and an outer back-up layer of elastomer, said back-up layer having a channel shaped cross-section defining chords fitted onto said valve body and said back-up layer including ring groove means on the radially outward surface thereof for permitting resilient structural deformation of said back-up layer, wherein said valve seat ring includes holes therein with said valve stem passing therethrough and said ring groove means are interrupted by said holes in said valve seat ring.

4,266,755

FASTENER EXTRACTING APPARATUS

Jeffrey C. Detrick, P.O. Box 3155, Shawnee, Kans. 66203

Filed Jul. 16, 1979, Ser. No. 57,729

Int. Cl.³ B66F *15/00*

U.S. Cl. 254—18 **9 Claims**

1. An apparatus for extracting a fastener at least partially imbedded in a workpiece comprising:

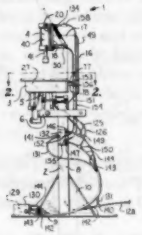
(a) a support member;

(b) a workpiece support table supported by said support member and having opposite surfaces;

(c) a movable head and actuating means therefor mounted to said support member and in proximity to one surface of said support table and having reciprocatory movement toward and away from a fastener in a workpiece on said support table, said movable head actuating means having structure providing a pushing force of sufficient power to dislodge and push a portion of said fastener outwardly of said workpiece;

(d) a puller structure and actuating means therefor connected to said support member and in proximity to the other surface of said support table and having movement toward and away from said support table; and

(e) opposing arms pivotally mounted to said puller structure



and forming jaw members with actuating means operable to move said arms toward and away from each other and seize said portion of said fastener therebetween and pull said fastener from said workpiece when said puller structure moves away from said support table.

4,266,756

TENSIONING OF METAL WIRES

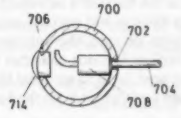
Nigel I. Anderson, Morgenzicht, Sloane St., Witkoppen, Transvaal, South Africa

Division of Ser. No. 760,141, Jan. 6, 1977, Pat. No. 4,129,927. This application Jun. 21, 1978, Ser. No. 917,673

Claims priority, application South Africa, Jan. 22, 1976, 76/0364

Int. Cl.³ F16G *11/00*

U.S. Cl. 256—47 **6 Claims**

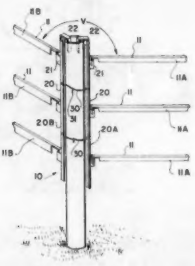


1. A fence structure comprising a post and a length of wire secured under tension to the post by a device including a body, a first passage formed in the body and through which the wire passes, a single second passage intersecting the first passage and containing a single locking member that is a body of revolution about an axis and is capable of rolling about such axis along the second passage, said locking member having a cross-sectional shape substantially similar to a cross-sectional shape of said second passage, and said locking member and said second passage each having a larger cross-sectional size relative to a cross-sectional size of said first passage whereby said locking member cannot enter any part of said first passage except a part included in said zone of intersection, a spring biasing the locking member towards the zone of intersection, and means securing the spring in the body, the angle of intersection of the first and second passages being less than 15° and the body having an end bearing on the post, the locking member being locked between the wire and the surface of the second passage, and said second passage terminating at said zone of intersection in a stop surface of said body inclined at an angle greater than 15° to the surface of said first passage on which the wire bears when locked in position so that the locking member, when engaging the stop surface, obturates only a part of said first passage and permits slip to be generated in said wire without said wire breaking when said wire is under extreme tension.

4,266,757
CORNER FENCE POST CLIP

Robert E. Kirkwood, 2251 Loma Vista Dr., Sacramento, Calif. 95825

Filed Jul. 16, 1979, Ser. No. 57,913
Int. Cl.[3] E04H *17/14*
U.S. Cl. 256—65 9 Claims



1. A detachable attachment to a vertical fence post to which a horizontal fence member may be detachably mounted comprising

an open channel bar, a first end of which is formed with a shaped section for fastening to the top of a fence post, such that the bar will extend in a vertical direction downwards along said post with the channel facing the post in the fastened position, and at least one fastening means located on said bar to which an end of a horizontal fence member may be detachably attached,

said fastening means of a shape and located on said bar so that a horizontal fence member when attached by said fastening means will extend in a first horizontal direction from said bar,

in which the said first end of the bar is formed with a hook-shaped section in the form of a detent of a shape to detachably latch about the top and into the interior chamber of a hollow fence post or into the interior of a fence post formed with a hollow interior chamber that is open to the top of said fence post, so as to suspend the bar from the top of said post when said detent is latched about the said post top,

said detent located to extend from the bar in a second horizontal direction opposed to the first horizontal direction that a said attached horizontal fence member extends.

4,266,758
SUPPORT FOR A METALLURGICAL VESSEL

Günter Schmitz, Duisburg, Fed. Rep. of Germany, assignor to Mannesmann Demag AG, Duisburg, Fed. Rep. of Germany

Filed Feb. 4, 1980, Ser. No. 118,491
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1979, 2905283
Int. Cl.[3] C21C *5/42, 5/50*
U.S. Cl. 266—244 5 Claims

1. A support for a metallurgical vessel, comprising

(a) annular support means spaced from the surface of said vessel;

(b) claw means disposed on said vessel and connected to said annular support means;

(c) a plurality of pliable expansible and compressible first tie rod structures positioned in said annular support means;

(d) said first tie rod structures being positioned parallel to and perpendicular to the longitudinal axis of said vessel;

(e) each said first tie rod structure being placed under an initial stress; the improvement characterized by

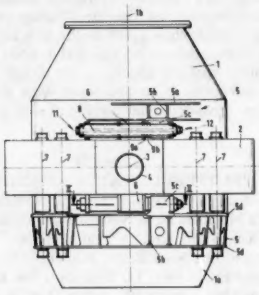
(f) each said first tie rod structure extending between a claw means and an annular support means;

(g) a second tie rod structure superimposed on each one of said first tie rod structures;

(h) a clamp head for each said first tie rod structure;

(i) a clamp head for each said second tie rod structure;

(j) said clamp head for said second tie rod structure is supported on its respective first tie rod structure; and

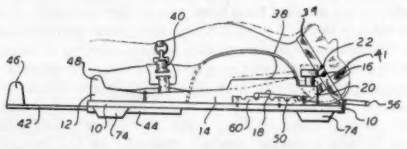


(k) a plurality of tie rods extending adjacent to each other in each respective first and second tie rod structure.

4,266,759
CARDIAC PATIENT SUPPORT

Arno J. Liebman, 1819 Shore Dr., Apt. 218, South Pasadena, Fla. 33707

Filed Oct. 22, 1979, Ser. No. 87,051
Int. Cl.[3] A61H *31/00*
U.S. Cl. 269—323 5 Claims

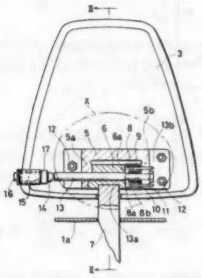


1. In a cardiac patient support for adjusting the position of a patient's head relatively to his torso; the combination comprising a flat, rigid, horizontal base; a substantially flat, rigid, torso support, said support being capable of directly supporting a patient's torso with the patient's head extending clear of the upper end of said support; a transversely extending hinge connecting the lower end of said support to said base toward the latter's lower end; and elevating means for raising and lowering the upper end of said support relatively to an underlying portion of said base; an improvement in said elevating means comprising similar screw knob assemblies bourn rotatably in opposite end corners of said support, each of said screw knob assemblies comprising a vertically threaded, manually rotatable knob restrained against material axial movement relatively to said support, a screw stud threaded to the threaded portion of said knob and having turn-preventive means at its lower end to oppose turning of said stud; and a holding member fixed upon said base and coacting with said turn-preventive means to oppose turning of said stud when said support is in lowered position, whereby turning of said knob on the non-turning screw stud raises or lowers said support; said turn-preventive means being vertically, slidably disengageable from said holding member to permit raising of the upper end of said support independently of operation of said screw knob assemblies.

4,266,760
DEVICE FOR CONTROLLING TILTING OF HEADREST OF TREATMENT TABLE

Takahiro Matsui, Uji, and Yoshio Saito, Kyoto, both of Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Feb. 14, 1980, Ser. No. 121,500
Claims priority, application Japan, Feb. 14, 1979, 54-18386[U]
Int. Cl.³ A47C *1/10*
U.S. Cl. 269—323 **4 Claims**

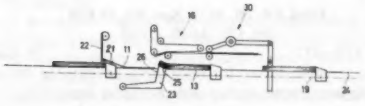


1. In a treatment table designed to tilt a headrest back and forth upwardly of a backrest and to freely stop said headrest by means of a device for controlling tilting of said headrest, said device comprises a rotary bearing connected to a support of said headrest and equipped on one side end face with radial trapezoidal pawl teeth, a support shaft rotatably carrying said bearing and allowed to axially move, a ratchet wheel having on a side end face another pawl teeth capable of meshing with said pawl teeth and carried by said support shaft and prevented from rotating circumferentially but allowed to axially move, a spring means for normally elastically biasing said ratchet wheel in one direction and bringing said pawl teeth and said another pawl teeth into meshing engagement with each other, and a slide shaft in the direction of the shaft acting against the action of said spring means and to bring said pawl teeth and said another pawl teeth out of meshing engagement with each other, whereby the headrest can be securely locked at any tilt angle and said headrest is preventing from tilting back or forth upwardly when said headrest is locked at said tilt angle.

4,266,761
APPARATUS FOR PLACING TERMINAL SHEETS OR THE LIKE ON TO LAYERS OF SHEETS

Hermann Buck, Huelben, Fed. Rep. of Germany, assignor to Bielomatick Leuze GmbH & Co., Fed. Rep. of Germany

Filed Dec. 29, 1978, Ser. No. 974,289
Claims priority, application Fed. Rep. of Germany, Jan. 10, 1978, 2800846
Int. Cl.³ B65H *39/055, 39/075*
U.S. Cl. 270—58 **7 Claims**



1. An apparatus for placing an end sheet or the like under a stack of sheets, comprising:

a conveying means for transporting said stack of sheets along a conveying direction in a substantially horizontal plane;

means for feeding said end sheet to said conveying means, said feeding means being displaced from and disposed above said conveying plane and operable to feed said end sheet in said conveying direction;

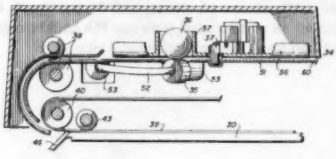
means for placing and holding said end sheet at a stationary predetermined position at least partially on said conveying means; and,

means for lifting said moving stack of sheets during transport of said stack of sheets by said conveying means, said lifting means being located adjacent and upstream of said predetermined position, whereby at least a leading portion of said stack is lifted and held above said conveying means until said stack is juxtaposed above said end sheet.

4,266,762
SHEET ALIGNMENT AND FEEDING APPARATUS

William E. Kramer, Fairport, and Frank P. Malinowski, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 29, 1979, Ser. No. 70,599
Int. Cl.³ B65H *9/16, 9/04*
U.S. Cl. 271—225 **8 Claims**



1. Document copying apparatus comprising:

a document exposure platen for viewing a document to be copied;

a sheet feed table defining a plane for supporting a sheet to be fed in a sheet feeding direction;

a side registration edge substantially parallel to the sheet feeding direction;

a sheet feed roll rotatably mounted in said feed table such that its top surface is in the supporting plane for feeding a sheet,

a cooperating pinch device in contact with the top of said feed roll, said feed roll being canted at an angle to the side registration edge to simultaneously drive a sheet against the side registration edge and in a forward sheet feeding direction, said feed roll having a coefficient of friction of from about 0.15 to about 0.30,

sheet take away and transport means adjacent the output end of said sheet feed table and into which said sheet feed roll feeds a sheet,

arcuate sheet direction reversing means adjacent said sheet take away and transport means to receive a sheet therefrom, said direction reversing means having an exit portion adjacent said document exposure platen, and

means to transport a sheet from the exit portion of said direction reversing means onto said document exposure platen.

4,266,763
RECREATIONAL BASKETBALL APPARATUS WITH MOVING BACKBOARDS

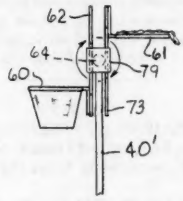
Andrew P. Collins, 3926 Dover Rd., Durham, N.C. 27705

Division of Ser. No. 829,987, Sep. 1, 1977, Pat. No. 4,202,543.
This application Feb. 11, 1980, Ser. No. 120,611
Int. Cl.³ A63J *3/00*; A63B *63/06, 63/08*
U.S. Cl. 272—3 **3 Claims**

1. A commercial basketball recreational facility comprising:

(a) an array of basketball courts grouped in spaced-apart sets on a common land area, each set of courts having a plural number of courts and each court having a goal-backboard support means and appropriate fencing shared with adjacent courts on either side thereof; and

(b) a set of elevated unique goal-backboard structures for the array of courts with one such unique structure being supported in each court on each said support means at an elevation appropriate to the game of basketball and including among the set of said unique goal-backboard structures at least one such unique goal-backboard structure having a pair of parallel vertical backboards arranged back-to-back with outwardly extending goals mounted thereon in parallel horizontal planes at different elevations and with means to rotate said back-to-back backboard around an axis located between the backboards comprising said back-to-back backboard structure.



4,266,764

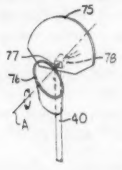
RECREATIONAL BASKETBALL APPARATUS WITH MOVING GOAL

Andrew P. Collins, 3926 Dover Rd., Durham, N.C. 27705

Division of Ser. No. 829,987, Sep. 1, 1977, Pat. No. 4,202,543. This application Feb. 11, 1980, Ser. No. 120,613

Int. Cl.[3] **A63J** *3/00;* **A63B** *63/06*

U.S. Cl. 272—3 **1 Claim**



1. A commercial basketball recreational facility comprising:

(a) an array of basketball courts grouped in spaced-apart sets on a common land area, each set of courts having a plural number of courts and each court having a goal-backboard support means and appropriate fencing shared with adjacent courts on either side thereof; and

(b) a set of elevated unique goal-backboard structures for the array of courts with one such unique structure being supported in each court on each said support means at an elevation appropriate to the game of basketball and including among the set of said unique goal-backboard structures at least one such unique goal-backboard structure having a vertical backboard with a conventional basketball goal mounted on a shaft member rotatable with respect to the backboard about a horizontal axis perpendicular to the plane of the backboard and means to rotate said shaft so as to present said goal in a periodically recurring normal horizontal basketball goal position for passage of the ball therethrough.

4,266,765

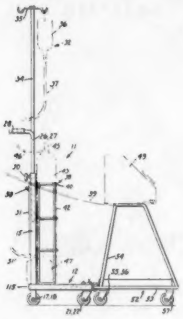
APPARATUS FOR AIDING PATIENTS TO AMBULATE

Narciso Sandoval, and Jean L. Curten, both of 1175 Blaine St., No. 87, Riverside, Calif. 92507

Filed Apr. 4, 1979, Ser. No. 27,030

Int. Cl.[3] **A61H** *3/04*

U.S. Cl. 272—70.3 **3 Claims**



1. Apparatus for aiding an infirm patient to ambulate while being connected to at least one body servicing device, comprising

a platform,

a pair of laterally spaced tubular posts extending vertically through said platform adjacent the rear of said platform and fixedly secured to said platform,

the lower ends of said posts being bifurcated,

a first pair of wheels rotatably mounted in said bifurcated ends of said posts for supporting the rear of said platform,

a second pair of laterally spaced supporting wheels,

castering means rotatably mounting said second pair of wheels to said platform adjacent the front of said platform for swiveling about vertical axes,

handle members telescopically mounted on the upper ends of said posts,

said handle members extending rearwardly to be grasped by said patient to steady said patient in walking condition and to enable said patient to maneuver said platform,

means for locking said handle members in different vertically adjusted positions relative to said posts,

a vertically extending panel extending between said posts,

said panel being spaced above said platform, and

means on said panel for maintaining said body servicing device in upright position below said panel with the bottom of said device resting on said platform.

4,266,766

EXERCISE DEVICE

Michael P. Calderone, 23768 Wilmont, East Detroit, Mich. 48021

Filed Jul. 30, 1979, Ser. No. 61,639

Int. Cl.[3] **A63B** *23/00*

U.S. Cl. 272—117 **16 Claims**

12. An exercise device for selectively developing the muscles of the user's arms, wrists and shoulders comprising:

a base;

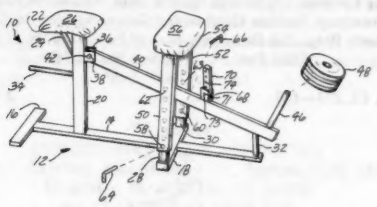
a seat supported above the base;

a forearm pad disposed forward of the seat and supported above the base;

a pivoted lever pivoted at a rearward end to a seat support, a forward end extending past the forearm pad a distance;

means for attaching selected weights at the forward end of the pivoted lever;

lifting means adapted to be grasped by the hands of the user; and



means for pivotally attaching the lifting means to the pivoted lever forward of the forearm pad.

4,266,767

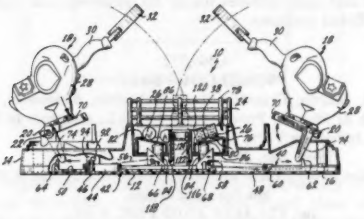
COMPETITIVE CAPTURE GAME

Gorden W. Spring, Anaheim, Calif., assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Jul. 30, 1979, Ser. No. 61,811

Int. Cl.³ A63F *9/00*

U.S. Cl. 273—1 R **12 Claims**



1. A toy which comprises:

a support base;

at least one object capable of freely moving on said support base;

an object positioning means located on said support base and capable of positioning and holding said object in a capturable position;

at least two object capture means movably mounted on said support base so as each to be independently capable of capturing said object and removing said object from said object positioning means;

each of said object capture means capable of interfering with the capturing of said object by said other object capture means.

4,266,768

BREAKAWAY SAFETY BASE

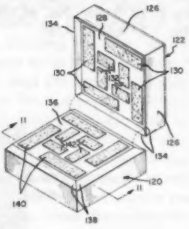
Roger E. Hall, 100 Lakeview Homes, Elizabethtown, Pa. 17022

Continuation-in-part of Ser. No. 758,638, Jan. 12, 1977, abandoned. This application Mar. 8, 1979, Ser. No. 18,844

Int. Cl.³ A63B *71/00*

U.S. Cl. 273—25 **9 Claims**

1. A breakaway safety base assembly comprising a lower ground support and an upper base member, said ground support having an upper mounting surface and a lower surface, means depending from the lower surface of the support for securing the support at a desired ground surface location on a playing field; the base member having a top, a lower surface adapted to set flush against the upper mounting surface, and joining sides between the top and the lower surface of the base member such that said base member is adapted to extend above the ground surface for engagement by a player whereby the safety base may be subjected to a lateral loading force said lower surface of the base member being adapted to be positioned upon the upper mounting surface of the support when the safety base is in the playing position on the ground support; a plurality of cooperating and complementary pairs of breakaway locking elements arranged throughout the upper mounting surface of the ground support and the lower surface of the base member to lock the base to the ground support with a shear resistant breakaway connection, each pair of breakaway locking elements having a plurality of exposed oppositely facing resilient and laterally deformable members, the deformable members of each pair of breakaway locking elements including cooperating engagement surfaces, first means for connecting one element of each pair to the lower surface of the base member with the deformable members facing outwardly on the lower surface of the base member and second means for connecting the other element of each pair to the upper mounting surface of the ground support with the deformable members facing outwardly of the upper mounting surface; said cooperating deformable locking elements of each pair being disposed to contact each other when the base member is positioned on the ground support in the playing position, the resil-



ient deformable members of said one locking element extending past the deformable element of said other locking element with the cooperating engagement surfaces of said members interlocking to form a plurality of laterally deformable shear resistant breakaway physical connections, said breakaway physical connections being disposed for sequentially releasably locking the base member to the ground support, and being adapted to sever due to shear forces only at the point of an applied lateral loading force sufficient to compress the base member at the point of applied force while the remainder of said connections hold the base member to the ground support and to sequentially sever across the base in response to only a lateral loading force at least equal to the the total shear breakaway force of individual pairs of locking elements whereby low non-injury potential lateral forces applied to the base member are insufficient to break the connection, while higher injury-potential lateral forces subject the connections to sufficient shear loading to deform the members and sequentially break the connections thereby breaking the base member away from the ground support in a lateral direction only.

4,266,769

TOY RACING CAR AND CIRCUIT

Shigeru Saitoh, Tokyo, Japan, assignor to Masudaya Toy Company Limited, Tokyo, Japan

Filed Sep. 18, 1978, Ser. No. 943,165

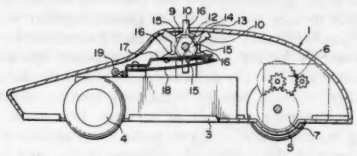
Claims priority, application Japan, Feb. 15, 1978, 53/17027[U]

Int. Cl.³ A63H *18/16*

U.S. Cl. 273—86 B **25 Claims**

1. A toy racing assembly, comprising a toy racing car having driving means for driving said car, said driving means including an electric motor having an electric circuit; speed shifting means for shifting the speed of said car; and a toy racing track arranged for guiding said car during running and having at least at one location of said track an engaging formation operative for actuating said speed shifting means, said speed shifting means including a resistance and actuating means operative for electrically connecting said resistance with and electrically

disconnecting said resistance from said electric circuit of said electric motor in dependence upon the position of said car relative to said engaging formation when said actuating means



engages said formation upon said car passing said formation whereby the speed of said car is shifted to a lower magnitude and to a higher magnitude, respectively.

4,266,770

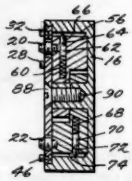
BLACKJACK 21 COMPUTER

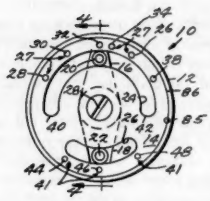
Charles A. Yeager, P.O. Box 181, Orangevale, Calif. 95662

Filed Jun. 8, 1979, Ser. No. 46,759

Int. Cl.³ A63F *1/18*

U.S. Cl. 273—148 R **9 Claims**





1. A hand held counter for making two counts of cards during a game of Blackjack, comprising:

a cylindrical frame closed at one end, open at the opposite end, and having a longitudinal axis and a circularly arcuate vertical inner side surface;

an axle fixed to said frame along said axis; a horizontal face plate disposed on said frame at said open end having first and second circularly arched slots at least partially surrounding said axis and corresponding first and second nonoverlapping scales circularly arched about said axis, said scales including tactilely identifiables indicia in the form of protrusions from the horizontal plane of said face plate adjacent said first and second slots corresponding to positive and negative counts; and

means for tactilely adjusting and identifying said two counts, including first and second horizontal indicator arms rotatably mounted to said axle beneath said plate and first and second positioning pins respectively mounted to said first and second indicator arms and respectively vertically extending into said first and second slots, said protrusions being disposed in horizontally spaced physical relation to all of said pins respectively radially outside said first and second slots so that said two counts may be tactilely identified by the spacial relation to said pins and said protrusions.

4,266,771

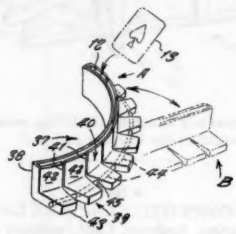
FLEXIBLE PLAYING CARD DISPLAY RACK

Peter Carbone, c/o George Spector 3615 Woolworth Bldg., 233 Broadway, Jackson Heights, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Jun. 15, 1979, Ser. No. 48,749

Int. Cl.³ A63F *1/00*

U.S. Cl. 273—150 **3 Claims**



1. A playing card display rack, comprising in combination, a narrow box in which playing cards can be displayed in spread out position, and a base for holding said box upright, and said rack being made of a material for selective flexing thereof, wherein said rack includes means for retaining said rack in arcuate flexed positions.

4,266,772

SOLID GOLF BALL

Frank S. Martin, Cranston; Terence Melvin, Kingstown, and Joseph K. Pieroni, Providence, all of R.I., assignors to Uniroyal, Inc., New York, N.Y.

Filed Aug. 28, 1972, Ser. No. 284,303

The portion of the term of this patent subsequent to Apr. 4, 1995, has been disclaimed.

Int. Cl.³ A63B *37/00*; C08L *9/00*

U.S. Cl. 273—218 **10 Claims**

1. An integral unitary solid golf ball which approximates performance characteristics of a standard wound golf ball, and retains said characteristics after extended play, made of a composition comprising, by weight, 100 parts of a resilient cis-polybutadiene elastomer having at least 50% of cis-1,4 structure and 10 to 60 parts of preformed zinc oxide-methacrylic acid reaction product in proportions of approximately 1 to 1.5 moles of zinc oxide per mole of methacrylic acid, the said composition being cured with a free-radical generating curing agent, the said preformed zinc oxide-methacrylic acid reaction product being in finely powdered form such as to pass a 200 mesh sieve.

4,266,773

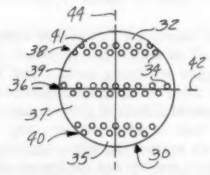
GOLF BALL

William H. Treadwell, 140 Dunham Dr., Battle Creek, Mich. 49015

Filed Sep. 27, 1979, Ser. No. 80,126

Int. Cl.³ A63B *37/14*

U.S. Cl. 273—232 **7 Claims**



1. A golf ball in the form of a spherical body having an outer surface, said golf ball comprising:

a plurality of parallel rough bands and a plurality of parallel

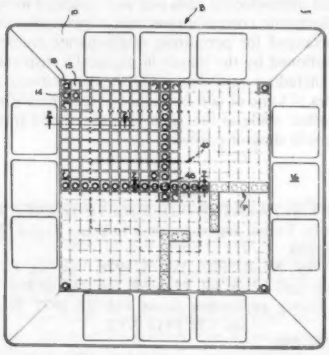
alternating smooth bands disposed on said surface, said rough bands being formed to completely trip the boundary layer of air flow around said rough bands so as to cancel the forces generated by said smooth bands when said golf ball rotates about predetermined axes of rotation to thereby control the path of said golf ball during its flight.

4,266,774

COMPETITIVE GAME APPARATUS

Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356

Filed Mar. 12, 1979, Ser. No. 10,924
Int. Cl.[3] A63F *3/00*; G04B *5/20*
U.S. Cl. 273—275 **4 Claims**



1. A game apparatus in which each of a plurality of players attempt to extend a single layer horizontal chain of game pieces while blocking such chain extensions of the other players during alternate "turns" defined by a timer, said game apparatus comprising:

(a) a flat game board comprising a playing surface having a plurality of unit-sized squares forming a grid of longitudinal and transverse rows, with each of said unit-sized squares including a downwardly tapered recess, with the longitudinal distance between adjacent recesses being the same as the transverse distance between adjacent recesses;

(b) at least two sets of different sized playing pieces for each of the players of the game, each set having a standard length constituting multiples of said unit-sized squares, the top surface area of the individual units of each of said pieces generally comprising a shape essentially conforming to the size of each of said unit-sized squares on said game board, each unit length of said pieces defined by linear groove-like indicia extending perpendicular to the longitudinal edges of said piece, each unit of said pieces having a downwwardly tapered plug conforming to the shape of said recesses for allowing said pieces to slide down quickly and easily to detachably secure said playing pieces in selected areas on said playing surface enabling a player to quickly secure a piece to said board while reaching over previously positioned pieces without dislodging such other pieces that have already been secured to said board, with each playing piece having a low vertical profile with the vertical thickness of the playing piece which rests on top of the playing board surface less than each of the longitudinal and transverse dimensions of said unit-square of the playing board;

(c) a different player identification on each of said sets of said playing pieces, so that each player's pieces are visually distinguishable;

(d) said playing pieces and said game board playing surface being shaped, arranged and proportioned so that said pieces may be positioned on said board only perpendicular or parallel to said longitudinal and transverse rows in said board and so that two pieces of the same or different unit lengths which are placed on adjacent spaces in a selected path form a visually continuous chain;

(e) said playing pieces and said game board telescoping by said plug entering said recess to enable said game apparatus to be low in height for conveniently playing as well as storing said game apparatus; and

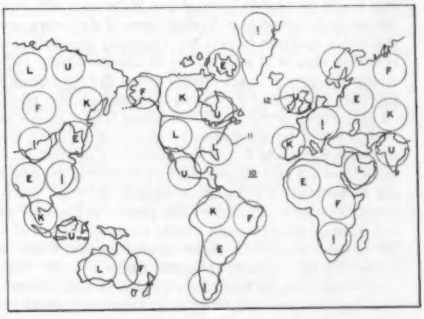
(f) a timer mounted on said game board beneath the surface of said board said timer comprising: a spring wind-up motor including a spring; a rotatable drive shaft connected to said spring, said shaft winding said spring when rotated in one direction, said shaft rotated in the other direction by the unwinding of said spring; an arm one end of which is perpendicularly connected to said shaft such that said shaft is rotated by raising and lowering said arm, said arm being movable from an upper position to a lower position, said arm rotating said shaft to wind said spring when said arm is moved from an upper position to a lower position, said shaft rotated by said spring to raise said arm from a lower position to an upper position when said spring moves from a wound state to an unwound state; a pin extending through the surface of a portion of said game board and abutting said arm, said pin being operable to push said arm to its lower position and thereby wind said spring and start the running of said timer to start a new time period for a player when said pin is pushed by a player, said timer establishing a limited time interval for each player to rapidly select a playing piece of suitable length for quick positioning of said playing piece, with said pin constituting manually resetting means in the form of a push button for resetting the timer at the end of each player's turn without disrupting the pieces on the board with each player attempting to continue the extension of his or her playing pieces and to block the extension of the opposing player(s) by placing his or her playing pieces at selected locations before the end of said limited time interval.

4,266,775

GAME INVOLVING THE DEALING IN COMMODITIES

Raveendra V. Chitnis, and Hema R. Chitnis, both of 2424 Courtly Dr., Fostoria, Ohio 44830

Filed Nov. 21, 1979, Ser. No. 96,506
Int. Cl.[3] A63F *3/00*
U.S. Cl. 273—278 **6 Claims**



1. A game involving the acquiring and selling of commodities comprising:

(a) a game board having a plurality of regions for commodities;

(b) sets of game pieces to be placed randomly on said regions, each set directed to and coded for a specific commmodity and selected pieces bearing numbers on their inner faces;

(c) a commodity die having indicia on the respective faces

for each set of commodities, whereby a roll determines a particular commodity to be bought or sold by a player;

(d) a plurality of different commodity units corresponding to said game pieces each unit displaying the face price of that commodity, such units being purchased at such face price by players successively in response to a roll of the command die which then indicates the commodity unit to be purchased and the game piece selected by the player determining from the number displayed, the number of units he must buy;

(e) a market price determining device movable for establishing the market price of each unit, said device comprising a rotatable wheel having a row of face price displaying commodity labels adapted upon rotation to line up with stationary row of numbers, the market price being calculated by multiplying the face price of a commodity by a number adjacent thereto;

(f) a quantity die having 1 to 6 units marked respectively on its faces;

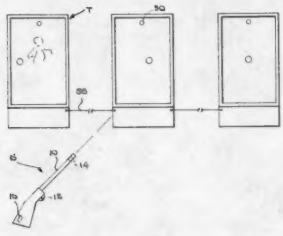
(g) a command die having indicia on its face to require buying/selling or impose a penalty or to provide financial benefit, the commodity die, the quantity die and the command die being thrown together by the players successively.

4,266,776

MULTI TARGET-SHOOTER GAME APPARATUS

Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356

Filed Feb. 12, 1979, Ser. No. 11,065
Int. Cl.³ F41J 5/02
U.S. Cl. 273—310 **13 Claims**



1. A multiple-target shooter game apparatus comprising:

(a) a light beam shooter device disposed at a shooter position and freely moveable by a player to permit said shooter device to be aimed at individual ones of stationary prepositionable multiple targets by traversing through a wide scanning area of at least 90° up to approximately 180°, to enable the player to selectively direct the light beam in a plurality of different directions from said shooter position;

(b) a plurality of separate self-contained frames constituting said multiple targets each including self-standing means for supporting said frame in a stationary upright position facing toward said shooter position to enable the positioning of each of said frames in various different pre-positioned locations selected by the player and spaced apart one from another through a wide scanning area of at least 90° thereby allowing a player to arrange said frames into a plurality of distinctly different arrays wherein each of said frames may be spaced a different distance from said shooting position and from each other in virtually any combination of vertically displaced positions throughout a horizontal scanning area of at least 90° up to 180°;

(c) a target positioned on a front surface of each of said separate frames said target including a light sensitive photoelectric cell for being engaged by the light beam from said shooter device;

(d) electronic control means operably connected to each of said targets for activating for a short space of time and then deactivating different ones of said photoelectric cells in a random sequential order not known in advance by the player, and including sensing means for requiring the player to shoot said light beam shooter device accurately at the activated target in order to score;

(e) separate indicator means on each of said targets and coupled to said control means for indicating that the photoelectric cell of the associated target is activated so that the player must visually scan all of said frames and the individual indicating means associated therewith throughout a wide scanning area of at least 90° to determine which of said targets is activated before quickly turning in the proper direction and aiming said shooting device at the randomly activated target in order to engage said photoelectric cell associated with the activated target with the light beam before said target is deactivated; and

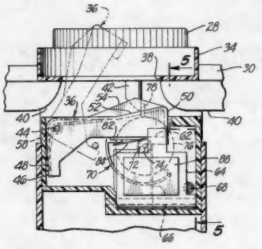
(f) electrical connector wires means operationally connecting said photoelectric cells and said indicator means with said electronic control means, said wires means designed and arranged for permitting said separate frames to be prepositioned by the player in physically disparate locations including positions wherein the respective front surfaces of some of said frames are at least partially facing each other while at the same time all of said frames are facing said shooter position.

4,266,777

TARGET APPARATUS FOR EJECTING ARTICLES

Masaki Ikeda, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Division of Ser. No. 875,675, Feb. 6, 1978, Pat. No. 4,212,412. This application Jul. 19, 1979, Ser. No. 58,808
Claims priority, application Japan, Feb. 22, 1977, 52-20680
Int. Cl.³ F41J 5/02
U.S. Cl. 273—310 **5 Claims**



1. A target game having a target apparatus, said target apparatus including holding means capable of holding at least one article, ejection means for ejecting an article held by said holding means, target means for controlling the operation of said ejection means so that when said target means is actuated said ejection means is operated so as to cause ejection of an article held by said holding means, and actuation means for causing actuation of said target means in which the improvement comprises:

said apparatus including a base,

said holding means comprising a turntable rotatably mounted on said base, said turntable including a plurality of separate article holders located around its periphery,

motive means for rotating said turntable connected to said turntable,

said turntable being located relative to said ejection means so that said ejection means is capable of ejecting an article from an adjacent one of said article holders and so that successive of said article holders are located adjacent to said ejection means as a result of rotation of said turntable,

said apparatus including cooperating mechanical escapement means on said turntable and said base responsive to operation of said ejection means to release the turntable for rotation by said motive means and stop said rotation

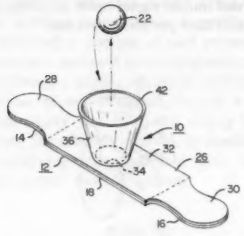
when the next successive article holder is located adjacent to said ejection means.

4,266,778

BALL PROJECTING AND CATCHING APPARATUS

William A. Sine, 332 Upland Ave., Clarksburg, W. Va. 26301

Filed Sep. 20, 1979, Ser. No. 77,316
Int. Cl.³ A63B *65/12*
U.S. Cl. 273—324 **6 Claims**



1. For a player to engage in games with a ball, apparatus comprising:

a lower non-elastic flexible strap having left and right ends and an intermediate portion having substantially in the center thereof an opening of diameter smaller than the diameter of the ball;

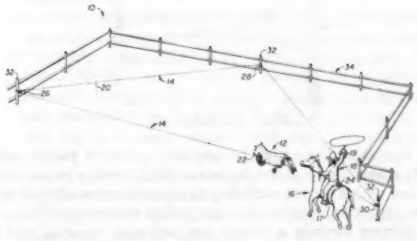
an upper non-elastic flexible strap having left and right ends and an intermediate portion, the broad surfaces of said strap being congruent with the broad surfaces of the lower strap, said upper strap having an opening of diameter larger than the diameter of the ball, said opening being axially aligned with the opening in the lower strap, the ends of the upper strap being superposed upon the corresponding ends of the lower strap so that the player upon holding said left ends near said right ends produces a separation between the intermediate portions of the straps, whereupon the ball in descending flight may be allowed to pass through the opening in the upper strap and be caught on the opening in the lower strap, and subsequently, by pulling said left ends away from said right ends, the ball will be relaunched through the opening in the upper strap and into the air.

4,266,779

ANIMATED ROPING TRAINING APPARATUS

Jackie L. English, 940 Matley La., #7, Reno, Nev. 89502

Filed Jun. 7, 1979, Ser. No. 46,273
Int. Cl.³ A63K *3/00*; A63B *69/00*; A63H *11/10*
U.S. Cl. 273—359 **9 Claims**



1. Roping practice apparatus that simulates an animal running on a generally horizontal surface for use by a person mounted on a pursuing horse, the apparatus comprising:

target means for simulating said animal including a frame, head and body elements mounted on said frame, said head and body elements being shaped and configured to simulate the head and upper back portions of an animal, and ground-engaging means mounted to said frame for supporting said target means on said surface; and

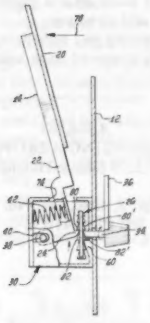
means for propelling said target in a direction generally away from the pursuing horse including means for interconnecting said target and said horse, said interconnecting means including at least three upright members located in spaced-apart relation to one another and generally circumscribing said horizontal surface and a reeving system comprising at least three pulley elements through which is passed a flexible cable, said cable interconnecting said target means and said horse, each of said pulley elements being attached to a corresponding one of said upright members.

4,266,780

TARGET WITH HIT COUNTER

Kenneth L. McQuary, Lawndale, Calif., assignor to Placo Products Company, Torrance, Calif.

Filed Nov. 13, 1979, Ser. No. 93,907
Int. Cl.³ F41J *5/00*
U.S. Cl. 273—387 **7 Claims**



5. A target with a rotating shaft output for driving a hit counter and comprising:

a housing;

a ratchet wheel having a shaft rotatably mounted in said housing, with said ratchet wheel shaft mounted for translation in said housing along the axis of rotation of said shaft;

a target member pivotally mounted in said housing for movement between first and second positions, said member having a pawl for engaging said ratchet wheel for advancing said wheel in a forward direction, with said target member mounted in said housing for translation in the direction of said shaft axis of rotation;

means for preventing reverse rotation of said ratchet wheel; and

bias means for biasing said target member toward said first position, with said bias means also biasing said target member pawl into engagement with said ratchet wheel and said ratchet wheel into engagement with said means for preventing reverse rotation.

4,266,781

RESILIENT ROTATABLE TOY

Walter L. Blue, 212 Turquoise Cir., Prescott, Ariz. 86301

Filed Oct. 29, 1979, Ser. No. 89,147
Int. Cl.³ A63B *65/00*
U.S. Cl. 273—420 **1 Claim**

1. A toy adapted

for use within a confined area, and

to be thrown toward and rotatably rebounded from a surface and retrieved in mid-air for the development of hand-eye coordination and manual dexterity,

said toy being readily disassembled and assembled free of adhesives and other permanent affixing means, and comprising,

(a) a tuft of fabric strands,

(b) a substantially rigid elongate shaft having a first end and a distal end, said distal end having an aperture for receiving said fabric strands,

(c) a resilient generally spherical ball having a bore adapted to frictionally receive said first end of said shaft, the ratio of the diameter of said ball to the length of said shaft being between 1:1.5 and 1:3, and,

(d) means for detachably, fixedly securing said fabric strands in place on said shaft after a portion of each strand is passed through said structure,

said fabric strands slowing and stabalizing the rotation of said toy and being readily removed from said shaft for repair and replacement.

4,266,782

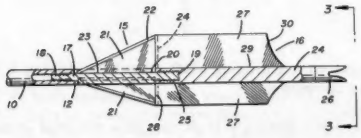
HUNTING ARROW

Michael J. Patterson, 2279 Sodom-Hutchings Rd., Vienna, Ohio 44473

Filed Apr. 3, 1980, Ser. No. 136,887

Int. Cl.³ F41B *5/02*

U.S. Cl. 273—423 **6 Claims**



1. A hunting arrow comprising a shaft, a tip on one end of said shaft and a circumferentially spaced fletch inwardly of the other end of said shaft, a notch in said other end of said shaft, said fletch comprising several angular shaped thin steel members, each having a razor sharpened leading edge, said leading edge disposed at an angle from said shaft and several flexible, thin, generally rectangular secondary members, each in axial alignment with said thin steel members and in abutment therewith.

4,266,783

CONTROL MECHANISMS FOR PICK-UP ARMS OF RECORD PLAYERS

Udo Milutzki, Walldorf; Harry Gaus, Kronberg; Dietwald Schotte, Eschborn, and Klaus Ramspeck, Frankfurt, all of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

Filed Mar. 14, 1978, Ser. No. 886,455

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1977, 2712186

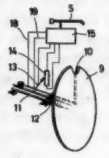
Int. Cl.³ G11B *3/08*

U.S. Cl. 369—41 **6 Claims**

1. In apparatus for controlling the movements of the tone arm of a record player relative to a turntable, the record player having base means on which the turntable and tone arm are supported, said apparatus including means for controlling the position of the pick-up supporting end of the tone arm in response to command signals, improved command signal generating means comprising:

a rotatable control disc, said disc being mounted on the base means of the record player, said disc being provided with a recess in an exposed peripheral edge portion thereof;

first command signal generating means mounted on said disc, said first command signal generating means including touch sensitive means positioned in said recess for producing an electrical output signal upon insertion of the finger of a user in said disc peripheral recess;



means for coupling signals provided by said first command signal generating means to the position control means associated with the tone arm;

second command signal generating means coupled to said disc, said second command signal generating means being operable in response to rotation of said disc under control of the user's finger in said disc peripheral recess to generate a second command signal; and

means for coupling signals provided by said second command signal generating means to the position control means associated with the tone arm.

4,266,784

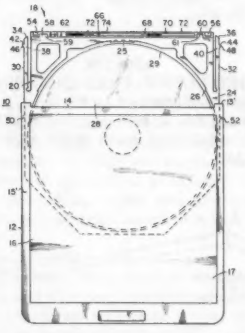
VIDEO DISC CADDY HAVING DISC ENTRAPMENT

Leslie A. Torrington, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 28, 1979, Ser. No. 98,254

Int. Cl.³ G11B *5/82, 25/04;* **B65D** *85/30*

U.S. Cl. 369—77 **1 Claim**



1. A disc record caddy for use with a record player; said caddy comprising a jacket having an edge opening in communication with a record enclosing cavity and a record retaining spine subject to insertion into said jacket; said spine defining a first portion forming a closure for said edge opening, and a further portion having a perimetrical wall defining an opening in which the enclosed record is received to form a record/spine assembly; said player having an input slot through which an occupied caddy is inserted along a path to load said enclosed record therein; said player including a record extracting

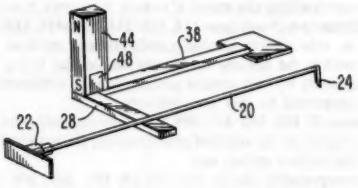
mechanism for removing said retaining spine from said jacket during jacket withdrawal subsequent to an occupied caddy arrival at a fully inserted position in said player, thereby retaining said record/spine assembly in said player resting on a record supporting platform; said record receiving opening in said spine being larger than said record for allowing free passage of said record therethrough to permit transfer of said retained record from said platform to a record turntable for playback, and from said turntable to said platform to redefine said record/spine assembly for record retrieval; an empty jacket being inserted into said player along said path for retrieving said retained record/spine assembly into said jacket for record removal; a portion of said perimetrical wall, disposed between said enclosed record and said closure portion of said spine, defining a recess, which is located such that a peripheral portion of said enclosed record is urged into said recess by said empty jacket, as said empty jacket is inserted into said player for record retrieval, to confine said record to said record receiving opening in said spine during such insertion to assure proper record retrieval.

4,266,785

STYLUS LIFTING/LOWERING ACTUATOR WITH IMPROVED ELECTROMAGNETIC MOTOR

Thomas W. Burrus, Cedar Rapids, Iowa, assignor to RCA Corporation, New York, N.Y.

Filed Nov. 28, 1979, Ser. No. 98,359
Int. Cl.³ G11B *3/10*
U.S. Cl. 369—216 **8 Claims**



1. In a playback system for recovering prerecorded information from a record, said record being rotatably supported on a turntable, said system including: a support member; and a stylus arm having a pickup stylus mounted at one end of said arm, said arm being pivotally secured at the other end to said support member; the apparatus comprising:

a leaf spring normally lying in a plane substantially parallel to said turntable, one end of said leaf spring being fixedly secured;

a stylus arm rest attached to the leaf spring in the vicinity of the other end of said leaf spring and adapted to receive said stylus arm;

a permanent magnet mounted on said leaf spring and extending along a line generally perpendicular to said turntable;

an assembly comprising a coil wound around a core, said core defining a central volume forming an air gap, said assembly having a pair of terminals connected to said coil; said assembly being mounted relative to said leaf spring and said permanent magnet such that said permanent magnet normally occupies a portion of said air gap whereby said permanent magnet is normally substantially within said central volume; and

energizing means connected to said pair of terminals for selectively causing current to flow through said coil to selectively establish a magnetic field in said air gap;

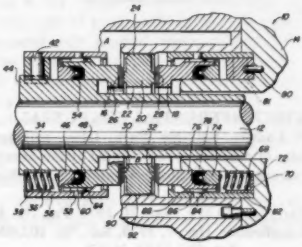
the orientation of said permanent magnet relative to said air gap being such that said permanent magnet is repelled away from said air gap under the influence of said energizing means in a direction to permit stylus/record contact.

4,266,786

MECHANICAL SEAL ASSEMBLY

Winfred J. Wiese, Whittier, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Aug. 13, 1979, Ser. No. 66,279
Int. Cl.³ F16J *15/38*
U.S. Cl. 277—40 **8 Claims**



1. In a mechanical seal assembly adapted to be associated with a rotatable shaft and a housing and between a first and second zone each containing a different fluid comprising:

a first seal ring having a seal face;

a second seal ring having a seal face;

means connecting said first and second seal rings to said shaft and housing, respectively, permitting limited axial movement of said first and second seal rings; the improvement which comprises:

a central seal ring positioned between said first and second seal rings and having a pair of seal faces, one of which engages said first seal face and the other of which engages said second seal face;

said central seal ring being free of connection with said shaft and said housing and encircling said shaft,

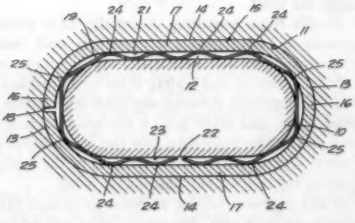
said housing centering said central ring and forming a bearing therefor.

4,266,787

PISTON RING

Takeo Fukui, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 28, 1980, Ser. No. 115,958
Claims priority, application Japan, Feb. 2, 1979, 54-11529[U]
Int. Cl.³ F16J *15/9*
U.S. Cl. 277—160 **4 Claims**



1. For use in an internal combustion engine having an oblong piston mounted to reciprocate within an oblong cylinder, the piston and cylinder having spaced curved end portions joined by side portions, and the piston having a peripheral groove, the improvement comprising: a split piston ring adapted to be received in the peripheral groove and having curved end sections adjoined by side sections, said sections having an outer surface for sliding contact with the cylinder, said piston ring being oblong and having a gap at the center of one of its curved end sections, a corrugated spring adapted to be re-

ceived in the peripheral groove and having corrugations contacting the side sections and curved end sections of said piston ring, said corrugations being closer together near said side sections than near said curved end sections.

4,266,788

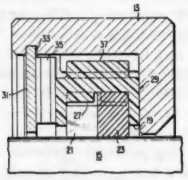
CIRCUMFERENTIAL SHAFT SEAL

Lawrence P. Ludwig, Fairview Park, Ohio, assignor to The United States of America as represented by the Administrator, National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 672,219, Mar. 21, 1976, Pat. No. 4,212,477. This application Dec. 7, 1979, Ser. No. 102,004

Int. Cl.³ F16J *15/32*

U.S. Cl. 277—193 **4 Claims**



1. In a circumferential seal for sealing a shaft rotatably journaled in a housing having at least one slot therein extending substantially parallel to said shaft, the improvement comprising

an elastomeric band spaced from the shaft and adapted to encircle the shaft, said band having at least one lug projecting from the outer surface thereof extending into said slot in said housing to prevent rotation of said elastomeric band relative to said housing and at least another lug projecting from the inner surface of said band facing said shaft,

a pair of sealing rings in substantial juxtaposition mounted in the space between the elastomeric band and the shaft, each of said sealing rings having an inner diameter dimensioned so that the sealing rings slidably and sealingly engage the shaft;

each of said rings consisting essentially of a plurality of segments in simultaneous engagement with both said elastomeric band and said shaft, the junctions between segments in one of said sealing rings being displaced relative to the junctions between segments in the other of said sealing rings, said other lug on the inner surface of said elastomeric band extending into the space between two adjacent segments to prevent rotation of the sealing ring segments relative to said elastomeric band,

each of said segments having an outer peripheral surface in engagement with said elastomeric band and an inner peripheral surface in engagement with said shaft so that said elastomeric band maintains said sealing ring in engagement with said shaft

a locking ring adapted to be mounted in the housing and to encircle the shaft in spaced relationship to said elastomeric band and said sealing rings; and

first resilient means disposed in the space between the locking ring and the elastomeric band for sealably pressing the elastomeric band into sealing engagement with the housing.

4,266,789

MACHINE TOOL CHUCK

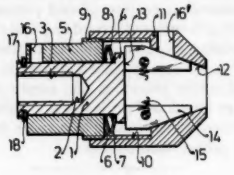
Günter Wahl, Leinfelden-Echterdingen; Gerhard Kuhlmann, Stuttgart, and Ernst Kränzler, Leinfelden-Echterdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 17, 1978, Ser. No. 934,482

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1977, 2740202

Int. Cl.³ B23B *31/04*

U.S. Cl. 279—60 **15 Claims**



1. A tool chuck for use with a power tool to clamp tool bits, having rotary driving means and which, additionally, place axially reciprocating forces on the chuck, comprising:

a mandrel core (**1, 101, 201, 301, 401, 501**) for attachment to the rotary driving means of the power tool;

a hollow collar (**11, 111, 211, 311, 411, 511**) partially coaxially surrounding said core, said collar having an interior at least partially conical surface and an enlarged portion surrounding the mandrel core;

at least two chuck jaws (**14, 114, 214, 314, 414, 514**) disposed in relatively movable configuration at least partially within the hollow interior of said collar being confined radially by said conical surface thereof and longitudinally supported by said mandrel core;

means (**5, 105, 205, 305, 405, 505**) longitudinally slidable with respect to the mandrel core coupling the mandrel core and the hollow collar; and

a compressible elastic member (**8, 108, 208, 308, 408, 508**) bearing against the core and said slidable means tending to move the collar toward the core, and being compressed upon tightening movement of the collar, and hence of the jaws therein against a tool bit;

said core, slidable means, elastic member, collar, and jaws, together with the tool bit clamped in the jaw forming a clamping connection chain, to permit tightening of the jaws, upon relative longitudinal movement of the hollow collar and longitudinal slidable movement of the slidable means against the force of the compressible elastic member, and additionally introduce the force of the compressible elastic member in the tightening force exerted by the jaws and thus hold the jaws securely even under impact conditions from the mandrel core to the jaws.

4,266,790

VEHICLE HEIGHT ADJUSTING APPARATUS

Tamio Uemura, and Yoshiki Kodama, both of Kawasaki, Japan, assignors to Tokico Ltd., Kanagawa, Japan

Filed Apr. 3, 1979, Ser. No. 27,014

Claims priority, application Japan, Apr. 20, 1978, 53-46822

Int. Cl.³ B60G *21/06*

U.S. Cl. 280—6.1 **7 Claims**

1. A vehicle height adjusting apparatus for a vehicle, comprising:

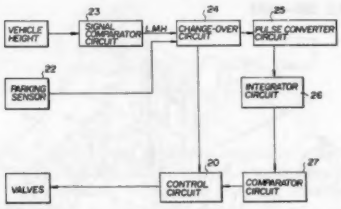
sensor means for detecting a vehicle height level by measuring the distance between the body and axles of said vehicle and for providing an output signal corresponding to said measured height level;

a signal comparator circuit for receiving and comparing said output signal from said sensor means and for classifying

said output signal into one of a plurality of vehicle reference height zones;

a pulse converter circuit for converting said classified signal into a pulse signal corresponding to one of said height zones;

an integrator circuit for integrating said pulse signal for each respective zone during a given time period;



a determination circuit for receiving said integrating signal for each zone from said integrator circuit and for comparating the number of pulses for each zone and provide an output signal indicative of said vehicle height level;

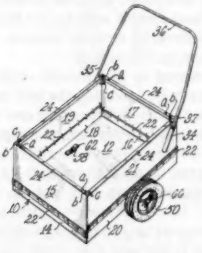
and a fluid circuit for controlling the inflow and outflow of fluid into and out of a suspension device in dependance upon said output signal from said determination circuit, whereby said vehicle height level is adjusted to be in a predetermined vehicle reference height zone.

4,266,791

COLLAPSIBLE AND CARRYABLE CART

June L. Myers, P.O. Box 22086, Los Angeles, Calif. 90022

Filed Sep. 28, 1979, Ser. No. 79,827
Int. Cl.³ B62B *11/00*
U.S. Cl. 280—37 **6 Claims**



1. A collapsible and hand-carryable cart assembly comprising in combination:

a generally rectangular, open-top, shallow container formed by a flat bottom wall and by short, upstanding, side and end walls fixed thereto and to each other, each of said walls having inner and outer faces, the container having handle means for manually carrying and storing the container when closed and held in generally vertical position with the outer face of one of said short walls disposed generally parallel to and adjacent the ground, the outer face of said bottom wall when upward-facing and dependently supported at a selected height being utilizable as a planar work surface

rectangular, upright disposable panel walls each hingedly secured to an upper edge of a respective side or end wall plus position-reinforcing pin means adapted for bracing interconnection of adjacent pairs of said hinged panel walls when jointly disposed upright so as to form a container extension continuous upward from said shallow container, said panel walls being disposed alternately to be hingedly infolded so as to spacedly overlie the inner face of said bottom wall, and having latch means for selectively retaining them in such infolded closed position,

the outer face of each of an opposing pair of panel walls having a thrust-insertion socket with lock means, adapted to receive and selectively retain an attachment arm of an operating handle,

a separable, generally U-shaped manual operating handle having a pair of attachment arms adapted for insertion/retention in the respective sockets and thus to brace said opposing pair of panel walls in upright position,

an elongated axle support member, storable within said shallow container and having a length approximating the width of said bottom wall, said member having an axle fixedly extending from each end thereof and having means for selective transverse attachment to the outer face of said bottom wall with said axles projecting outward therefrom,

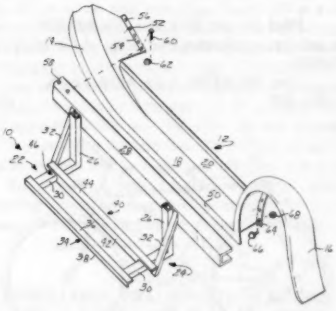
and a pair of wheels adapted to be functionally mounted on the respective axles and alternately individually to be stored within said shallow container when detached.

4,266,792

VEHICLE FENDER AND RUNNING BOARD SUPPORT

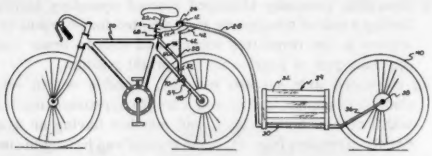
Earl Sanders, Battle Creek, and Daniel Sanders, Lansing, both of Mich., assignors to The Model A and Model T Car Reproduction Corporation, Battle Creek, Mich.

Filed Sep. 28, 1979, Ser. No. 79,999
Int. Cl.³ B62D *25/16*
U.S. Cl. 280—153 R **1 Claim**



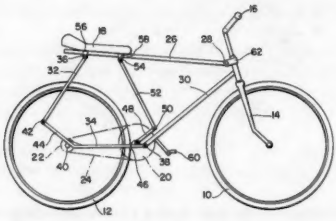
1. In a vehicle of the type having a frame including a longitudinal frame member and a fiberglass body mounted on the frame and including a body sub-assembly comprising a pair of longitudinally spaced fenders joined by an integral running board and having a scuff plate extending between the fenders to cover the vertical distance between the frame and the running board which is located below the frame level, the improvement of a running board support concealed by said scuff plate and disposed between said fenders, comprising a pair of longitudinally spaced brackets having vertical legs secured at their upper ends to said frame to depend therefrom and horizontal legs located at the lower portions of said vertical legs to project outwardly relative to the frame, a diagonal brace reinforcing each horizontal leg and lying within the confines of said scuff plate when the body is mounted on the frame, and longitudinal supports secured to said horizontal legs to directly underlie and to directly support the running board when the body is mounted on said frame.

4,266,793
BICYCLE HITCH DEVICE
Larry A. Pryor, 8458 S. 800 West, Wanatah, Ind. 43690
Filed Nov. 5, 1979, Ser. No. 91,266
Int. Cl.³ B60D *1/06*; B62K *27/00*
U.S. Cl. 280—204 **9 Claims**



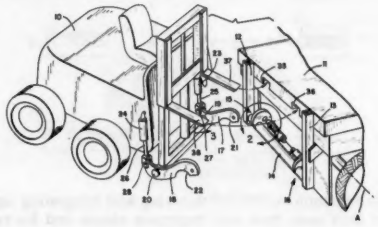
1. A hitch for a bicycle-trailer combination wherein the trailer is provided with a draw bar and cup member fixed to the distal end of said draw bar, the improvement comprising:
- an arm member having a ball member fixed to the distal end of said arm member;
- means formed at the other end of said arm member to connect to a frame component of the bicycle;
- a bracket member connected to a second frame component of the bicycle;
- the cup member fixed to the distal end of said draw bar mounted on said ball member;
- a lever member depending from said draw bar, the end thereof extending below said ball member; and
- a spring member connecting said bracket member and said end of said lever member, said spring member, said end of said lever member and said ball member being in vertical alignment.

4,266,794
TWO-WHEELED VEHICLE
Hans G. Bals, Blümgesgrund 44, Gelnhausen, Fed. Rep. of Germany
Filed Jul. 24, 1978, Ser. No. 927,004
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1977, 2734560
Int. Cl.² B62M *1/20*; A63B *69/16*
U.S. Cl. 280—227 **17 Claims**



1. A two-wheeled vehicle similar to a bicycle comprising a frame having an upper frame member and a lower frame member pivotably connected to a front frame member by joints therebetween, and a rear frame member pivotably connected to the lower and upper frame members by joints therebetween, and wherein the upper frame member carries a saddle, the front frame member is provided with a bearing for a steering handle and a front wheel fork, the lower frame member is supported as a rocker on the axle of a rear wheel such that the rear part of the lower frame member extend beyond the axle, and is provided with a bearing for a driving sprocket wheel of a chain drive transmitting torque to the rear wheel, and the rear frame member is a link between the upper and lower frame members, the vehicle further comprising pedals connected to one of the front and the lower frame members, a crank arm fixed to the driving sprocket wheel and a connecting rod connected between the crank arm and the upper frame member.

4,266,795
FORKLIFT TOWING STRUCTURE
Donald G. Walker, 330 Grandview Cir., Camarillo, Calif. 93010
Filed Oct. 22, 1979, Ser. No. 86,753
Int. Cl.³ B60D *1/04*
U.S. Cl. 280—402 **4 Claims**



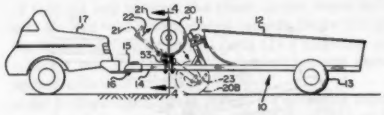
1. A forklift towing structure for use in towing a forklift behind a load hauling flatbed truck with which the forklift vehicle is to be used at a remote site for loading and/or unloading operations, said structure including:
- (a) a round bar secured in spaced relationship to the rear of said truck in a horizontal position parallel to the rear axle of the truck, opposite ends of said bar defining left and right engagement means;
- (b) left and right movable means mounted intermediate their ends adjacent to left and right front corner portions of said forklift vehicle, in positions to engage said left and right engagement means respectively, said left and right movable means comprising rocking levers pivoted intermediate their ends at said points adjacent to said left and right front corners of said forklift vehicle, the front ends of said levers having underside arcuate cut-outs for engaging over said engagement means and
- (c) power means carried by said forklift vehicle coupled to said movable means for lowering the said movable means simultaneously to thereby lift the front end of said forklift together with its front wheels free of the ground; and
- (d) locking means including flange members secured to said round bar adjacent to said front ends of said rocking levers, said flange members and locking levers having holes which fall into registration when said underside arcuate cutouts engage said round bar and the front of said forklift vehicle is raised and pins insertable through said registering openings for securing of the movable means to the engagement means,

whereby the left and right front corners of the forklift vehicle are captured to the left and right rear corners of the truck, the forklift vehicle being towed with only its rear wheels on the ground so that the longitudinal fore and aft axis of the forklift vehicle remains in the same vertical plane as the fore and aft longitudinal axis of said truck, thereby facilitating and stabilizing towing of the forklift vehicle.

4,266,796
TRAILER TONGUE WHEEL
Robert L. Riggs, 361 NE. Village Squire, Gresham, Oreg. 97030, and Howard Riggs, Rte. 2, Box 474, Aurora, Oreg. 97002
Filed Oct. 29, 1979, Ser. No. 89,031
Int. Cl.³ B60S *9/16*
U.S. Cl. 280—414 R **10 Claims**

1. In a trailer vehicle having a tongue for towing the vehicle, a spindle housing mounted in transverse horizontal position on said tongue; a strut assembly comprising a strut spindle mounted for rotation in said housing, a tongue supporting strut

mounted on one end of said spindle, and a steering spindle rotatable in said strut; a wheel spindle on one end of said steering spindle, and a wheel on said wheel spindle; said strut assembly and strut spindle being rotatable in said housing 180° from a downwardly extending working position to an upwardly extending position with said wheel above and at one side of said tongue, said steering spindle being rotatable 180° in said



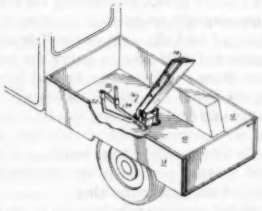
strut to position said wheel over said tongue in a carrying position; a steering and tongue lifting lever, a transverse socket on said steering spindle to receive said lever for steering said wheel on the ground in said working position, and a second socket in said strut assembly transverse to said strut spindle to receive said lever for swinging said strut to said working position and lifting said tongue.

4,266,797

SAFETY HITCH CATCH

Charles D. Rhodes, P.O. Box B, Petersburg, Tex. 79250

Filed Apr. 6, 1979, Ser. No. 27,661
Int. Cl.³ B60D *1/06*; B62D *53/06*
U.S. Cl. 280—423 R **9 Claims**



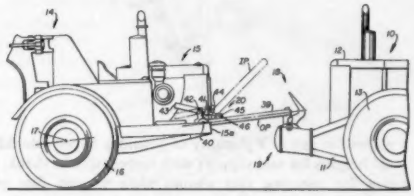
1. In a trailer ball and socket coupler, the socket having
a. a body,
b. a bifurcated plate on the bottom of the body,
c. a jaw bolt extending upward on each side of the bifurcation into the body,
d. said jaw bolts parallel to each other,
e. a ball jaw pivoted to each of the bolts,
f. each of the ball jaws having an outer face and a concave inner face,
g. a bail bolt extending across the body normal to the jaw bolts,
h. a bail pivoted to the body by said bail bolt,
j. a bail spring innerconnecting the body and bail to bias the bail closed, and
k. a catch mounted on the body to lock the bail in a closed position,
m. so that a ball with a stem may be locked into the socket with the ball over the bifurcated plate and the stem within the bifurcation and the jaws snuggly clasping the ball by the concave inner face and the jaws held closed by the closed bail snuggly contacting the outside faces and the bail locked down by the catch;
the improved structure comprising in combination with the
n. a bail handle attached to the bail so that the bail may be operated from a remote position,
o. a catch handle attached to the catch so that the catch may be operated from a remote position,
p. a notch on the catch, and
q. a finger on the bail, so that the bail may be latched up thereby freeing the ball jaws.

4,266,798

PUSH-PULL COUPLING FOR POWER SCRAPERS

Roger M. Smith, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 14, 1979, Ser. No. 11,990
Int. Cl.³ B60D *1/04*
U.S. Cl. 280—481 **6 Claims**



1. In a first, wheel supported, push-pull vehicle (**10**) having a mounting frame (**21**) fixedly secured to the rear thereof, for use with a second, wheel supported vehicle (**14**) having a bail (**39**) pivotally mounted to the front thereof, the improvement comprising:
a first upstanding coupling element (**27**) having upper (**27*a***) and lower (**27*b***) ends, one of said ends including a rearwardly opened, bail engaging hook (**37**);
a second upstanding coupling element (**28**) having upper (**28*a***) and lower (**28*b***) ends, one of said ends of said second element including a forwardly opened, bail engaging hook (**38**);
means for independently pivoting said first and second coupling elements on said mounting frame about a common transverse axis (**31**) between said upper and lower ends;
and resilient means (**36**) supported by said mounting frame for engaging the other of said ends of said first and second coupling elements, whereby one of said coupling elements is engaged by said bail for pushing of said first vehicle by said second vehicle and the other of said coupling elements is engaged by said bail for pulling of said second vehicle by said first vehicle, said resilient means cushioning the thrust of said coupling elements against said mounting frame as they are independently pivoted by respective pushing or pulling engagement with said bail.

4,266,799

ADJUSTABLE TRAILER HITCH DEVICE

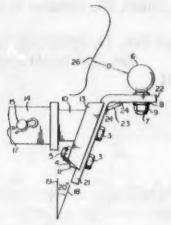
Leonard A. Wood, P.O. Box 750, North Bay, Ontario, Canada (P1B 8J8)

Filed Jun. 26, 1979, Ser. No. 52,304
Claims priority, application Canada, May 18, 1979, 327919
Int. Cl.³ B60D *1/06*
U.S. Cl. 280—490 R **12 Claims**

1. An adjustable trailer hitch device for attachment to a towing member of a vehicle comprising:
a first member including an elongated shank attachable to the towing member of the vehicle and a first elongated flat plate united with said shank at one end of said shank, said first plate being disposed obliquely to a longitudinal axis of said shank so as to be inclined with respect to a vertical when said shank is attached to the towing member, said first plate having a plurality of spaced holes therein;
a second member including a second elongated flat plate and a support to which a towing ball can be attached, said support being rigidly united with said second plate at an obtuse angle thereto and said support being disposed in a plane parallel to the longitudinal axis of said shank when

said second plate is secured to said first plate, said second plate having a plurality of spaced holes therein;

said first and second plates and said holes therein being so arranged that said second plate can be positioned against said first plate with holes in said first and second plates



aligned in any of a plurality of positions to provide different heights for said support with respect to said shank; and

means for securing said second plate to said first plate through the aligned holes in any of the plurality of positions.

4,266,800

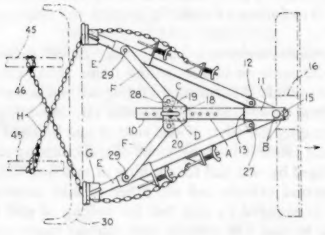
TOW BAR APPARATUS

Wallace H. Hawkins, Old Buncombe Rd., Greenville, S.C. 29611

Filed Sep. 18, 1978, Ser. No. 942,945

Int. Cl.³ B60D 1/14

U.S. Cl. 280—491 D **2 Claims**



1. A tow bar apparatus comprising:

an elongated longitudinal central frame member;

means carried adjacent a forward end of said frame member for securement to a towing vehicle;

a pair of diverging towing arms pivotally connected and diverging rearwardly from adjacent said forward end of said central frame member;

connection means carried adjacent rear ends of said diverging arms for being connected to a towed vehicle;

a plurality of longitudinally spaced openings provided in said central frame member;

a mounting element carried for longitudinal sliding movement on said frame member;

a removable member carried by said mounting element for selectively inserting into one of said spaced openings adjustably fixing said mounting element rigidly on said central frame member;

a pair of link members each having an outer end and an inner end;

means pivotally connecting said outer ends of said link members to respective one of said diverging towing arms, and

means pivotally connecting said inner ends of said link members to laterally spaced points on said mounting element providing a rigid connection between said central frame and said towing arms.

4,266,801

BRAKING DEVICE FOR SKIS

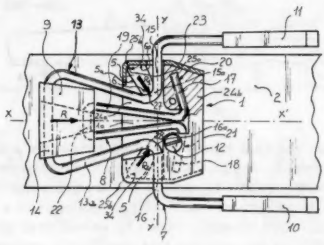
Georges P. J. Salomon, Annecy, France, assignor to Etablissements Francois Salomon et Fils, Annecy, France

Filed Nov. 3, 1978, Ser. No. 957,271

Claims priority, application France, Nov. 4, 1977, 77 33250

Int. Cl.³ A63C 7/10

U.S. Cl. 280—605 **7 Claims**



1. A braking device for skis comprising at least one braking member comprising a braking portion and an upper leg portion articulated on the ski for rotation about both a transverse, horizontal axis and a vertical axis at a location between said braking portion and said upper leg portion and movable between an operative braking position in which said braking portion juts out below the inferior plane of said ski and an inoperative skiing position, said braking device being associated with a separate control device maintaining the end of said upper leg portion opposite said articulation location in a longitudinal vertical plane of said ski, said control device being sensitive to the presence of a ski boot to assure the passage of said braking member from said operative to said inoperative position when said ski is put on, by a substantially vertical swinging movement of said braking device to a level above the upper plane of said ski combined with pivotal movement of said braking device in a horizontal plane, resulting in a lateral displacement of said braking portion in the direction of the longitudinal axis of said ski, and comprising

(a) a movable small rod pivoting substantially in the plane of said ski and bearing at one end against a portion integral with said braking member and at its other end bearing against a fixed pivot point fastened to said ski, keeping the area of said portion in contact with said connecting rod at a constant distance from said pivot point, so that pivoting of said connecting rod when said braking member is pivoted in the horizontal plane and drawn into its inoperative position under the action of the control device brings about a variation in the spacing between said braking member and the plane passing through said longitudinal axis of the ski and the perpendicular to the plane thereof.

4,266,802

SKI BRAKE

Josef Svoboda, Schwechat, Austria, assignor to TMC Corporation, Baar/Zug, Switzerland

Filed Feb. 22, 1979, Ser. No. 14,273

Claims priority, application Austria, Feb. 22, 1978, 1297/78

Int. Cl.³ A63C 7/10

U.S. Cl. 280—605 **12 Claims**

1. A brake for use on a ski, comprising:

a mounting member adapted to be mounted on said ski;

an axle and first support means on said mounting member supporting said axle for rotation and about an axis which extends at a right angle to the longitudinal axis of said ski;

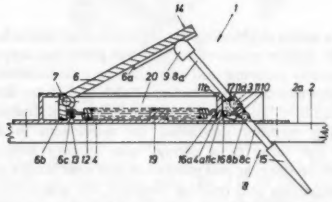
bearing means mounted on said axle and being movable therewith;

at least one brake leg means having a first segment extending generally parallel to the longitudinal axis of said ski, a second segment connected at one end thereof to said first

segment and extending generally perpendicularly to said first segment and a third segment connected to the other end of said second segment and extending perpendicularly to said second segment and being longitudinally offset from said first segment, said first segment being received in said bearing means and thereby supported for rotation both about the longitudinal axis of said first segment and said axis of said axle between (1) a braking position wherein said third segment extends along the lateral edges of said ski and beneath the plane of the lower surface of said ski and said first segment extends above the plane of the upper surface of said ski and (2) a retracted position wherein said first and third segments extend above said upper surface of said ski;

a pedal and second support means for pivotally supporting said pedal on said mounting member, said pedal being movable about an axis spaced longitudinally along the length of said ski from said axle and extending parallel to said axis of said axle;

a cam member fixedly secured to said first segment adjacent said end and extending radially outwardly therefrom;



resilient means operatively connected to and extending between said pedal and said brake leg means for urging said pedal to a position inclined at an angle to the upper surface of said ski with the end of said pedal remote from the pivot support therefor overlaying an end of said first segment remote from said connection to said second segment;

guide means on said pedal operatively slidingly engaging said cam member; and

stop means on said mounting member positioned so as to be engaged by said cam member when said pedal and said brake leg means are pivoted about said axis of said axle from said braking position to said retracted position, said stop means, upon engagement thereof by said cam member, effecting a movement of said cam member and, consequently said brake leg means in said bearing means about said longitudinal axis of said first segment thereby resulting in a movement of said third segment inwardly of said lateral edges of said ski.

4,266,803

SKI BRAKE

Alois Himmetsberger, Vienna, Austria, assignor to TMC Corporation, Baar, Switzerland

Filed Aug. 10, 1979, Ser. No. 65,688

Claims priority, application Austria, Aug. 16, 1978, 5935/78

Int. Cl.³ A63C 7/10

U.S. Cl. 280—605 **4 Claims**

1. A ski brake for use on a ski, comprising:

first axle means adapted to be mounted on said ski, said first axle means having a first axis extending transverse of the longitudinal axis of said ski;

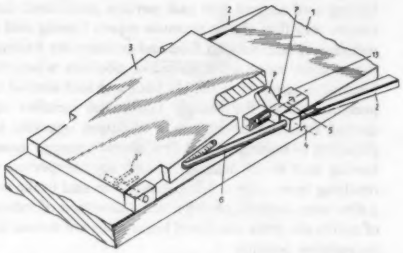
pedal means pivotally secured to said first axle means and movable between a first position upwardly inclined to the upper surface of said ski and a second limit position generally parallel to said upper surface of said ski;

resilient means biasing said pedal means toward said first limit position;

at least one ski brake blade means operatively connected to said pedal means for effecting a movement thereof between a braking position when said pedal means is in said first limit position and a retracted position when said pedal means is in said second limit position and in response to a movement of said pedal means between said first and second limit positions;

second axle means secured to said ski brake blade means and having a second axis extending parallel to said first axis;

third axle means adapted to be mounted on said ski at a location longitudinally spaced from said first axle means, said third axle means having a third axle extending parallel to said longitudinal axis of said ski, said third axle means additionally having a pair of connected lever arms, each



located on opposite sides of said third axis with at least one of said lever arms being positioned in the path of movement of said pedal means, said third axle means further having bearing means on one of said lever arms for rotatably supporting said second axle means for rotation about said second axis so that a movement of said pedal means from said first limit position toward said second limit position will effect an engagement of said pedal means with the other of said lever arms to cause said third axle means and said ski brake blade means to rotate in unison about said third axis.

4,266,804

SKI BRAKING DEVICE

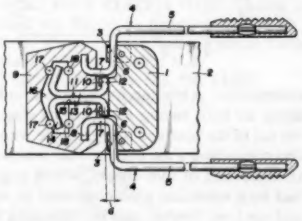
Masahiro Murata, Matsudo, Japan, assignor to Hope Co., Ltd., Tokyo, Japan

Filed Nov. 7, 1979, Ser. No. 92,097

Claims priority, application Japan, Dec. 29, 1978, 53-181675[U]

Int. Cl.³ A63C 7/10

U.S. Cl. 280—605 **5 Claims**



1. A ski braking device comprising:

a base plate adapted for mounting on a ski plate;

a brake member rotatably supported on said base plate, said base plate having first bearing means for supporting said brake member and said brake member having brake arms located along the side edges of said ski plate wherein said brake arms are capable of extending below the lower surface of said ski plate when said ski brake is in an operative position;

a pedal member connected to said brake member at one end

thereof opposite to said brake arms, said pedal member having a hollow interior;

a metal member slidably extending into said hollow interior, said base plate having second bearing means spaced a predetermined distance from said first bearing means, said metal member comprising a metal rod having a first end portion rotatably supported at said second bearing means and a second free end portion extending into said hollow interior of said pedal member, said second free end portion being bent toward the side edge of said ski plate; and

first elastic pressure means and second elastic pressure means located in said hollow interior of said pedal member for having said second free end portion positioned therebetween, said first elastic pressure means biasing said metal member at said second free end portion for having said brake arms move into operative position when the ski binding releases from the ski boot and said second elastic pressure means for biasing said metal member at said second free end portion in a direction opposite to the direction of biasing of said first elastic pressure means for having said metal member absorb an unexpected shock resulting from a force being exerted on said brake arms in a direction opposite to the normal direction of movement of said brake arms when said brake arms are moved into an inoperative position.

4,266,805

BINDING FOR CROSS COUNTRY SKIS

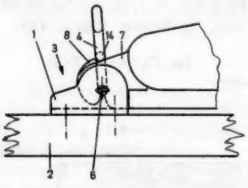
Erwin Weigl, Brunna.Gebirge, Austria, assignor to Polyair Produkt Design Gesellschaft m.b.h., Austria

Filed Aug. 3, 1978, Ser. No. 930,664

Claims priority, application Austria, Aug. 9, 1977, 5810/77

Int. Cl.³ A63C *9/18*

U.S. Cl. 280—615 **16 Claims**



1. In combination, a binding for a cross-country ski and a cross-country ski boot having an extension that protrudes in front of the toe of the boot and is engageable with the binding, said binding comprising a toe iron member which is connected to the ski, comprised of two cheeks, which engage opposite sides of said boot extension; a pin connected to, and captively held in, said toe iron member, said pin extending into the boot extension when the binding is in position for use, said pin also being angled to form a U-shaped member, which has a free limb that is pivotally movable to a position over the extension, said ski boot extension being insertable between the cheeks of said toe iron member from above, said extension having at least one downwardly open groove extending transversely to the longitudinal direction of the boot, and said groove being adapted to receive the pin from below; said limb when in position over the extension forming and a locking means which opposes or prevents movement of the boot extension out of the retained position.

4,266,806

SAFETY SKI BINDING

Erwin Weigl, Brunn am Gebirge, and Karl Stritzl, Vienna, both of Austria, assignors to TMC Corporation, Baar, Switzerland

Division of Ser. No. 880,078, Feb. 22, 1978, Pat. No. 4,165,883.

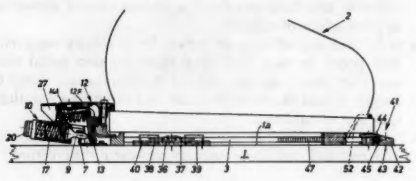
This application May 23, 1979, Ser. No. 41,824

Claims priority, application Austria, Feb. 23, 1977, 1212/77

The portion of the term of this patent subsequent to Aug. 28, 1996, has been disclaimed.

Int. Cl.³ A63C *9/081*

U.S. Cl. 280—618 **6 Claims**



1. In a safety ski binding having a sole plate and a heel holder and a toe holder mounted on said sole plate and support means for pivotally securing said sole plate to a ski intermediate said toe holder and said heel holder, a holding member mounted on a ski, said heel holder being held in a boot holding position by a locking member supported for movement in a housing against the force of a spring, said locking member being mounted on the rear end portion of said heel holder and operatively engaging said holding member, the improvement comprising wherein said sole plate is formed by a pair of rods which extends coextensively along the longitudinal axis of said ski and mounting means mounted on said ski for supporting said pair of rods for limited upward pivotal movement at the two front free ends thereof, said housing being mounted on and movable with said sole plate adjacent the rear thereof wherein said pair of rods has teeth thereon, along which a carriage is longitudinally guided, said carriage including releasable locking means operatively connected to said teeth to facilitate an adjustment and releasable locking of said carriage relative to said pair of rods, wherein a spring wire is provided on said carriage, which spring wire forms said toe holder of said ski binding and is bent to overlie the toe portion of the sole of said ski boot, said spring wire including means for preventing both a lateral movement thereof relative to said carriage and a pivoting relative to said carriage about a transverse axis which lies substantially at a right angle with respect to the longitudinal axis of said ski, and wherein said spring wire is generally U-shaped and has upwardly inclined and forwardly extending legs relative to said carriage, the free ends of each of said legs adjacent said carriage extending beneath said rods and into a slot in said carriage having a width generally equal to the width of said spring wire, said slot extending in said carriage transversely of the longitudinal axis of said ski to thereby effect a securement thereof to said carriage.

4,266,807

COLLAPSIBLE FRAME STRUCTURE FOR A CHILD'S PUSH CHAIR

Peter G. Griffin, 80 Hembs Crescent, Great Barr, Birmingham, England

Filed Jul. 19, 1979, Ser. No. 59,002

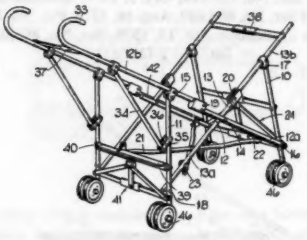
Claims priority, application United Kingdom, Nov. 23, 1977, 48727/77

Int. Cl.³ B62B *7/06*

U.S. Cl. 280—650 **6 Claims**

1. A collapsible frame structure for a child's push chair, the structure comprising, when extended, a pair of side frames in substantially parallel planes, a collapsible X frame in a plane transverse to the planes of the side frames, respective ends of said X frame being pivotally connected to two locations on

each of said side frames, means for maintaining said X frame extended, and wheels adjacent the free ends of the X frame, characterised in that each said side frame has first and second elongate members (**10, 11**) which are maintained in spaced relationship by third and fourth (**12, 13**) elongate members which extend between respective opposite corners (**15, 16** and **17, 18**) of a quadrilateral which is defined by two points on each of said first (**10**) and second (**11**) members, said third (**12**) and fourth (**13**) members being pivotally interconnected and also pivotally connected to said points (**15, 16, 17, 18**) on the



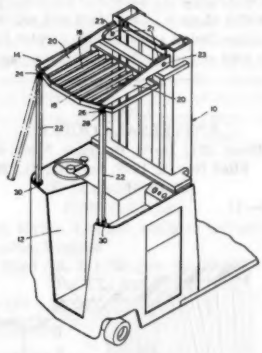
first (**10**) and second (**11**) members, and hinge means (**19**) for allowing said third (**17**) and fourth (**13**) members to be folded intermediate their pivotal interconnection (**14**) and their respective connections with a first two (**17,15**) of the adjacent corners on said quadrilateral, said adjacent corners being defined by points on respective ones (**10, 11**) of said first and second members, respective ends of said X frame (**21**) being pivotally connected to two locations (**22, 23**) on each of said side frames adjacent the other two corners (**16, 18**) of said quadrilateral.

4,266,808

OVERHEAD GUARD FOR LIFT TRUCK

Nyle W. Fassett, Georgetown, Ky., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Oct. 11, 1979, Ser. No. 83,910
Int. Cl.³ B60R *21/02*
U.S. Cl. 280—756 **4 Claims**



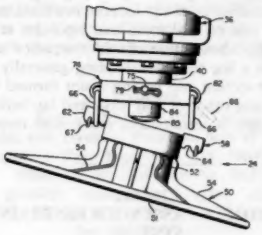
1. In a lift truck of the stand-up rider type having an operator's compartment at the rear of the truck and an operator's overhead guard extending over the compartment, the improvement comprising a pair of transversely spaced overhead guard rear support legs connected pivotably at the upper ends to the overhead portion of the guard and connected at the lower ends to the lift truck for pivotal break-away movement towards the rear of the truck about the upper pivotal connections thereof when the front side of a rear leg is struck with sufficient force, each rear leg having a semi-positive connection to the truck which permits said rearward pivotal movement in said one direction while inhibiting pivotal movement forwardly and to both sides.

4,266,809

OUTRIGGER FLOAT PAD ASSEMBLY

James G. Wuerflein, Winona, Minn., assignor to Burro-Badger Corporation, Winona, Minn.

Filed Dec. 26, 1978, Ser. No. 972,698
Int. Cl.³ B60S *9/02*
U.S. Cl. 280—766 **11 Claims**



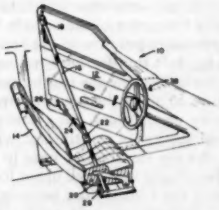
1. For use with an outrigger lift jack having a shaft adapted to be connected to a float pad, an improved mounting for releasably connecting the float pad to said shaft, comprising the combination of said float pad having a base and hub means upstanding from the base, cooperating surfaces formed between the shaft and the hub means and adapted when engaged to transmit the outrigger load from the lift jack shaft to the float pad, coupling means on the shaft, at least two apertured link means each sized to extend between the coupling means and the hub means, means swingably connecting said apertured link means at spaced locations around the center axis of the shaft to one of the coupling or hub means, whereby each respective link means is adapted to swing adjacent the other of the coupling or hub means when the load transmitting surfaces are engaged, and at least two projecting means on the other of the coupling or hub means which each removably projects into an aperture in a corresponding link means to releasably trap said adjacent link means when the load transmitting surfaces are separated incidental to the shaft being retracted for outrigger travel, whereby the link means then suspend the float pad from the shaft.

4,266,810

PASSIVE SEAT BELT SYSTEM WITH GUIDE CLIP

Rudy V. Thomas, and Robert L. Stephenson, both of Sterling Heights, Mich., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jul. 30, 1979, Ser. No. 62,082
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—802 **10 Claims**



1. In a vehicle passive seat belt system including a torso belt having one end attached at an upper location of a door of the vehicle and an opposite end attached to said vehicle on the

inboard side of a seat located adjacent said door, said torso belt being adapted to be positioned about the torso of an occupant in said seat and a lap belt having one end attached at a lower location on said door and an opposite end attached to said vehicle on said inboard side of said seat, said lap belt being adapted to be positioned about the pelvic region of the occupant; said belts being automatically positioned about said occupant, the improvement comprising:

junction means interconnecting said belts and permitting relative movement of said belts, said junction means including:

an integrally formed guide clip having a generally planar section extending over and secured in a fixed manner with respect to one of said torso and lap belts at a location adjacent the inboard side of said seat when said door is closed, and a leg section extending generally normal to said planar section and having a slot formed therein for receipt of said other of said torso and lap belts, whereby said other belt is permitted to move with respect to said guide clip.

4,266,811

PASSIVE VEHICLE PASSENGER RESTRAINT BELT SYSTEM

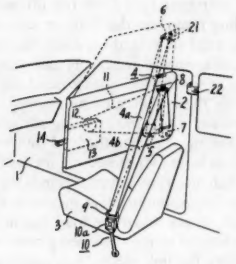
Juichiro Takada, 3-12-1, Shinmachi, Setagayaku, Tokyo, Japan

Filed Jan. 10, 1979, Ser. No. 2,245

Claims priority, application Japan, Mar. 9, 1978, 53/029075[U]

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—803 **5 Claims**



1. In a passive vehicle passenger restraint belt system which includes a shoulder belt extending up from an emergency locking retractor affixed on the rear portion of the vehicle door to and freely through an anchor ring mounted on the upper rear portion of the door and extending downwardly and transversely in from the anchor ring to a point of connection at generally the center of the vehicle behind, inboard of and below a passenger-position on the vehicle seat, and a lap belt extending from an emergency locking retractor affixed on the lower rear portion of the door to and freely through a movable transfer guide ring on the door and from the transfer guide ring generally transversely across the vehicle to a point of connection in generally the center of the vehicle behind, inboard of, and below a passenger-position on the seat, the improvement comprising a lap belt transfer wire having a section guided substantially vertically along the rear portion of the door from a lower location adjacent the lap belt retractor to an upper location partway up the door, the transfer guide ring being fastened to said section of the transfer wire, and means for automatically driving the transfer wire to move the transfer guide ring between said lower and upper locations in response to movements of the vehicle door between closed and partly open positions, respectively, said driving means being a mechanical motion amplifier which includes a linkage connected at one end to the vehicle body adjacent the front of the door and having a rack gear at the other end, an input pinion meshing with and driven by the rack gear, at least one amplifier gear pair driven by the input pinion and coupled to and driving an output pulley which is, in turn, connected to and drives the transfer wire, and said driving means being ineffective to move the transfer wire when the door is moved between the partly open and fully open positions.

4,266,812

HEAT REACTIVATIBLE ADHESIVE BOOK BINDING

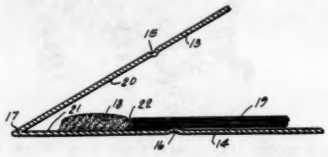
Henry N. Staats, Deerfield, Ill., assignor to General Binding Corporation, Northbrook, Ill.

Division of Ser. No. 729,814, Oct. 5, 1976, abandoned, which is a division of Ser. No. 604,659, Aug. 14, 1975, Pat. No. 3,995,886.

This application Apr. 13, 1978, Ser. No. 896,028

Int. Cl.³ B42D *1/10*

U.S. Cl. 281—29 **6 Claims**



1. A bound book comprising:

(a) a cover having first and second leaves of substantially the same surface area and a center fold joining the two leaves;

(b) a plurality of paper sheets having ends positioned adjacent and parallel to but not in contact with the center fold; and

(c) a melted adhesive longitudinally extending strip adjacent and parallel with the center fold and having first and second substantially parallel surface portions in respective binding contact with inside binding surface portions of the first and second leaves, said center fold being positioned at one side of the strip and at an opposite side a sidewall of the strip being formed by a flowed back portion engaging in alignment said ends of the paper sheets, a curved transition portion being provided between said center fold and each of said first and second leaf binding surface portions, and a width of each of said first and second parallel surface portions being substantially greater than a width of the side wall engaging the ends of the paper sheets.

4,266,813

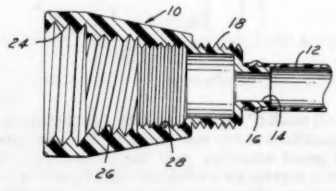
UNIVERSAL COUPLER

Robert D. Oliver, 2512 Doris, Brighton, Mich. 48116

Filed Nov. 6, 1979, Ser. No. 91,728

Int. Cl.³ F16L *55/00*

U.S. Cl. 285—12 **6 Claims**



1. A coupling device comprising a body, a generally conical hole through the body, a plurality of internal threaded portions formed in the hole extending from the large end of the hole and of stepwise sequentially decreasing diameter, snap fit attachment means on the body adjacent the small end of the hole and

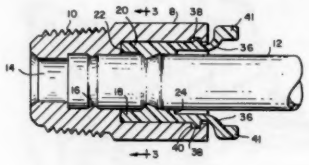
an external threaded portion on the body adjacent the snap fit attachment means.

4,266,814

PLASTIC TUBE ADAPTER

Stephen F. Gallagher, Norton, Mass., assignor to VFP Corporation, Hingham, Mass.

Filed Mar. 23, 1979, Ser. No. 23,072
Int. Cl.³ F16L *39/00*
U.S. Cl. 285—319 **3 Claims**



1. A hollow fitting containing compression barbs and separate locking barbs for receiving and locking any tubing, throughout a broad range of hardness, in place within said fitting, the upper portion of said range being characterized by materials which do not flow around said compression barbs and are not readily penetrated by said locking barbs, the lower portion of said range being characterized by materials which do flow around said compression barbs and are readily penetrated by said locking barbs, said fitting comprising:

(a) an elongated hollow tubular member constituting a beam section; said tubular member being defined by circumferentially continuous inner and outer walls;

(b) a plurality of compression barbs and a plurality of locking barbs projecting from the inner wall of said member and disposed around its circumference;

(c) said compression barbs and locking barb being located at substantially the midpoint of the length of said beam section, said compression barbs being so substantially thicker than said locking barbs that said compression barbs are capable of transmitting a strong compression force upon the wall of any of said tubing, within said upper portion of said hardness range, to hold said tubing in place;

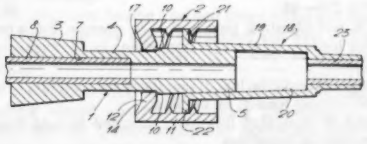
(d) said locking barbs being longer than said compression barbs and so substantially thinner than said compression barbs that said locking barbs are capable of flexing in one direction under the longitudinal motion of tubing moving into said member and of flexing in the opposite direction and digging into the surface of any of said tubing, within said lower portion of said hardness range, upon any reverse motion to retain said tubing in place.

4,266,815

CONNECTORS

David E. Cross, Hythe, England, assignor to Smiths Industries Limited, London, England

Filed Jul. 2, 1979, Ser. No. 54,108
Int. Cl.³ F16 *25/00*
U.S. Cl. 285—330 **6 Claims**



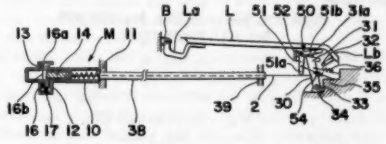
1. A medico-surgical connector assembly comprising a connector portion and a coupling member, said connector portion having a body with a Luer-tapered portion of plastic material and a locking ring having an aperture therethrough that embraces said body, said body and said aperture being shaped to prevent relative rotation of said locking ring on said body, said coupling member being formed with a plastic Luer-tapered portion shaped for fluid tight cooperating Luer engagement with the said Luer-tapered portion of said connector portion, said coupling member being formed with projections on its outer surface that are shaped to engage with means on the inner surface of said locking ring so that said coupling member can be retained in a fluid-tight seal with said connector portion by said ring, and said body being shaped to permit limited axial displacement of said ring along said body sufficient to enable fluid tight engagement of said cooperating Luer-tapered portions without engagement of the means on the inner surface of said ring with the projections on said coupling member.

4,266,816

LOCK REMOTE CONTROL

Tadao Mukai, and Teruhika Takatani, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Jul. 20, 1979, Ser. No. 59,178
Claims priority, application Japan, Jul. 20, 1978, 53/100383[U]; Jul. 24, 1978, 53/102258[U]
Int. Cl.³ E05C *3/22*
U.S. Cl. 292—129 **5 Claims**



1. A lock remote control device which comprises, in combination:

a lock assembly comprising a latch element for selectively locking and unlocking a movable structural element supported for movement between first and second positions, said latch element being supported in position for movement between released and latched positions, said movable structural element capable of being moved from the first position towards the second position when the latch element is moved from the latched position towards the released position, and a first biasing means exerting a first predetermined biasing force to urge said latch element to the latched position;

a latch cable having one end secured to the latch element;

a manipulatable unit positioned at a location spaced a distance from the location where the lock assembly is positioned, said manipulatable unit comprising a movable member supported for movement between third and fourth positions, said latch cable extending between said lock assembly and said manipulatable unit and having the other end secured to said movable member, a second biasing means exerting a second predetermined biasing force, larger than the first predetermined biasing force, to urge said movable member to assume the third position, and an actuator means responsive to an external force and operable to block the movement of the movable member from the fourth position towards the third position during the absence of the external pushing force and when the latch element is held in the latched position with the movable structural element held in the first position, and also operable, when the external force is applied thereto, to permit the movable member in the fourth position to move towards the third position by the action of the second biasing means thereby to draw the latch cable in such one direction as to move the latch element from the latched position towards the released position to unlock the movable structural element;

reset means supported for movement between fifth and sixth positions; and

a third biasing means exerting a biasing force, the sum of said first and third predetermined biasing forces being larger than the second predetermined biasing force, said third predetermined biasing force acting on said reset means to urge the latter towards the sixth position, said reset means being so operatively associated with the movable structural element that, when the movable structural element is moved from the first position towards the second position with the latch element held in the released position, said reset means is moved to the sixth position as biased by the third biasing means and, when the movable structural element is moved from the second position back to the first position, said reset means is moved from the sixth position towards the fifth position against the third biasing means, said reset means when moved to the sixth position causing the latch element to move from the released position to the latched position with the movable member drawn to the fourth position through the latch cable against the second biasing means.

4,266,817

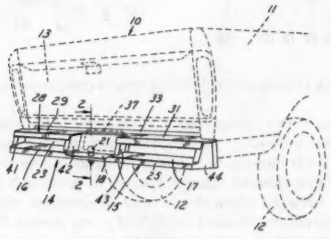
REAR STEP BUMPER

James L. Mason, Birmingham, and Steve Varjabedian, Southfield, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 13, 1978, Ser. No. 968,957

Int. Cl.[3] **B60R** *27/00*

U.S. Cl. 293—117 **3 Claims**



1. A dual-step rear bumper assembly adapted to be mounted on the rear end of a truck frame below the level of a cargo carrying box supported on the latter, comprising:

an elongated lower integrally continuous crossmember the length of which extends the full width of the bumper assembly,

the lower crossmember having a depressed central portion delimiting lower step portions at each end thereof,

the lower crossmember having along its longitudinal edge closest to the rear end of the truck frame an integral upstanding kick plate flange extening substantially the full length of the crossmember and having at its longitudinal edge furthest away from the truck frame a down-turned flange means,

the two flanges coacting to provide longitudinal rigidity to the lower crossmember,

an upper crossmember providing upper step portions paralleling and overlying in fixed spaced vertical relationship the lower step portions on the lower crossmember,

the upper crossmember step portions having a longitudinal space therebetween overlying the central portion of the lower crossmember to provide a visibility opening for a vehicle license plate mounted on the kick plate flange,

the upper crossmember at one longitudinal edge being supported on the upper edge of the lower crossmember kick plate flange,

and a plurality of vertical bulkheads between the upper and lower crossmembers for maintaining the two in spaced relationship under vertical load applied to any of the lower or upper step portions.

4,266,818

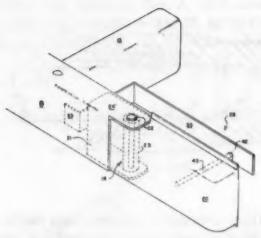
SAFETY BUMPER FOR TRUCKS

John H. Hightower, Thomasville, N.C., assignor to Tommy Lee Holmes, Thomasville, N.C.

Filed Mar. 8, 1979, Ser. No. 18,851

Int. Cl.[3] **B60R** *19/00*

U.S. Cl. 293—150 **3 Claims**



1. A safety bumper for use on a truck where said bumper extends across the body of the vehicle in confronting relationship with the front tires thereof, said safety bumper comprising:

(a) a shortened main body portion spanning a distance no greater than the distance between the tires of the vehicle and having front and rear surfaces;

(b) a pair of horizontally elongated end extension members having forward and rearward faces and a protruding section;

(c) means for pivotally mounting one of said extension members to each end of said main body portion about a vertical axis, said pivotal mounting means being positioned at the end of said main body portion such that the rearward face of said main body portion overlaps said protruding section of said extension member and said extension member extends substantially across the front of the respective wheel of said vehicle;

(d) bracing means for maintaining said extension member in a first normal position essentially in colinear relationship with said main body portion with said protruding section biased toward the rear surface of said main body portion;

(e) said bracing means including disengagement means acting responsively to severe impact for disengaging said end extension from said first normal position and causing said extension member to assume a second free swinging position still in substantially colinear relationship with said main body portion.

4,266,819

GRAPPLE APPARATUS

W. Bruce Pemberton, #314, Lake Howell Arms Apartments, Casselberry, Fla. 32707

Filed Oct. 10, 1978, Ser. No. 949,945

Int. Cl.[3] **B66C** *3/16;* **B66F** *9/18*

U.S. Cl. 294—88 **10 Claims**

1. A self-adjusting pipe and pole grapple for wheel and crawler loaders, or the like, comprising in combination:

a frame;

coupler means attached to said frame for coupling to a wheel or crawler loader, or the like;

a pair of elongated fork tines attached to said frame and extending therefrom;

a pair of tracks attached to said frame;

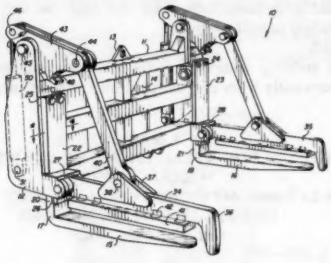
a pair of sliding brackets, one slidably mounted to each of said pair of tracks;

a pair of elongated grapple arms, each arm movably at-

tached at one end portion thereof to one said sliding bracket;

hydraulic actuating means for actuating said pair of elongated grapple arms; and

linkage means movably attached to each said elongated grapple arm between the ends thereof and to said hydraulic actuating means, said linkage means having a first linkage arm movably attached to each said grapple arm and a second linkage arm movably attached to said first



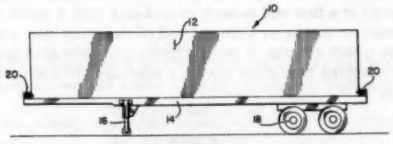
linkage arm and to said frame and also attached to a hydraulic actuating means hydraulic cylinder, whereby actuation of the hydraulic cylinder will drive said second linkage arm pivoting on said frame to drive said first linkage arm and said grapple arm so that said hydraulic actuating means actuates said linkage means and grapple arms to grip pipes, poles, or the like, on said pair of fork tines and said sliding brackets slide on said track to allow said grapple arms to adjust for varying size loads or pipes, poles, or the like.

4,266,820

VARIANCE COMPENSATING COUPLER FOR CONTAINER-CARRYING TRAILER CHASSIS

Robert L. Whaley, and James L. Day, both of Cincinnati, Ohio, assignors to Pullman Incorporated, Chicago, Ill.

Filed May 14, 1979, Ser. No. 38,993
Int. Cl.³ B62D *23/00*
U.S. Cl. 296—35.3 **12 Claims**



1. A variance compensating locking coupler for engaging and holding a corner casting of a container resting on a truck chassis, the improvement comprising:

a housing securely attached to the chassis;

manually reciprocable locking means located within said housing and having a first longitudinal axis, said locking means including;

eccentric pin means having a second longitudinal axis spaced a distance from the first longitudinal axis and lockingly engageable with pin engagement means of the corner casting;

handle means extending through one end of said housing;

connecting means operatively joining the eccentric pin means and the handle means for linear and rotational movement within said housing;

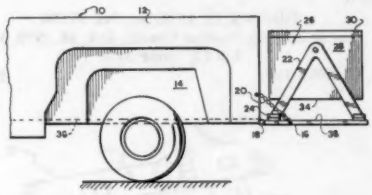
said housing providing bearing means for reciprocating the eccentric pin means between a retracted and extended position and for rotating the eccentric pin for alignment and locking into the associated corner casting.

4,266,821

COMBINED TAIL GATE AND TOOLBOX

Louis M. Gillet, 46 445 Washington St., Palm Desert, Calif. 92260

Filed Jan. 26, 1979, Ser. No. 6,640
Int. Cl.³ B60R *5/04*
U.S. Cl. 296—37.6 **3 Claims**



1. In combination, in a pick-up truck having a pick-up box;

(a) a toolbox dimensioned to fit within the pick-up box;

(b) a tailgate hinged to the pick-up truck to close the pick-up box in one position of the tailgate, and to extend beyond the pick-up box in the open position of the tailgate; and

(c) top-center suspension pivot mounting means pivotally supporting said toolboxsolely on said tailgate in all positions of the toolbox and tailgate so that the tailgate swings the toolbox from a closed-storage position within said pick-up box when the tailgate is closed, to an open-access position when the tailgate is opened;

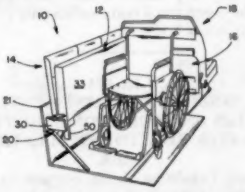
(d) said toolbox having side wall structure and said means including opposed trunnions on said side wall structure and said means also including opposed stanchions rigidly fixed on said tailgate and pivotally connected with said trunnions.

4,266,822

FOLDABLE TRANSPORTATION SEAT

Chester J. Barecki, Grand Rapids, and Larry A. Wilkerson, Wyoming, both of Mich., assignors to American Seating Company, Grand Rapids, Mich.

Filed Nov. 15, 1978, Ser. No. 960,913
Int. Cl.³ B60N *1/12*
U.S. Cl. 296—65 R **21 Claims**



1. A foldable transportation seat for a vehicle adapted for seating a passenger in a conventional manner and for folding vertically to accommodate a wheelchair in the space formerly occupied by the seat, said seat comprising:

a seat support adapted for securement to the interior of a vehicle;

a seat having a bench portion;

seat pivot means carried by said seat support for pivotally mounting said bench portion of said seat for movement between a first, generally horizontal position for normal passenger use and a second, generally vertical position;

a bumper support member extending generally outwardly from said seat support adjacent a side of the seat bench portion;

a bumper carried by said bumper support member; and

bumper positioning means operatively connected to said seat and said bumper for moving said bumper from a first,

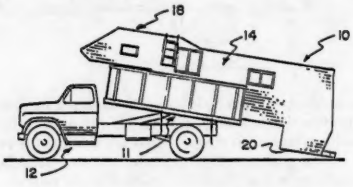
stored position wherein said bumper does not interfere with normal passenger use of said seat to a second, operative position wherein a wheelchair may abut said bumper.

4,266,823

CAMPER UNIT FOR USE WITH A DUMP TRUCK

Lloyd A. Beler, Box 57, Mankota, Saskatchewan, Canada (S0H 2W0)

Filed Sep. 19, 1979, Ser. No. 77,094
Claims priority, application Canada, Oct. 18, 1978, 313707
Int. Cl.[3] B60P *3/42*
U.S. Cl. 296—164 **5 Claims**



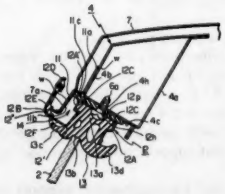
1. A camper unit for detachable engagement upon a dump truck body which includes means to tip said body rearwardly at an angle to the horizontal and to return same to the normal horizontal position; comprising in combination a camper body and frame construction including a major front portion having a planar base and a minor rear portion depending downwardly from the rear side of said front portion, said body and frame being supported on the dump truck body by said planar base, and front support means hingedly secured to the underside of said front portion adjacent the front end thereof whereby said camper unit is supported upon the minor rear portion and upon said front support means when removed from the associated dump truck, said front support means including a frame hinged by the upper end thereof to the underside of said front portion and extending transversely thereacross, to hinge upwardly and reardly to a substantially horizontal stored position between said major portion and said dump truck body and downwardly and forwardly to a ground engaging position, and stop means to limit the downward and forward movement of said frame, said frame automatically hinging downwardly and forwardly by gravity to said stop means when said camper unit is removed from the dump truck body sufficiently for said frame to clear said dump truck body.

4,266,824

WEATHERSTRIP RETAINER UNIT FOR AUTOMOBILES AND ROOF CONSTRUCTION WHICH ACCOMMODATES WELL TO INSTALLATION OF ROOF RACK

Hiroshi Inamoto, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Mar. 20, 1979, Ser. No. 22,349
Claims priority, application Japan, Apr. 6, 1978, 53/44194[U]
Int. Cl.[3] B62D *25/06*
U.S. Cl. 296—210 **14 Claims**



1. In a weatherstrip retainer unit for an automobile body which includes a roof with a roof edge, a roof rail of a box-shape including an inner wall member and an outer channel member having ends secured to the inner wall member,

the weatherstrip retainer unit comprising:

a member including a retainer section attachable to the roof rail and for receiving a weatherstrip,

said member including a molding section which, when said retainer section is attached to the roof rail, is disposed outwardly, with respect to the automobile body, of the roof and extends along the roof edge;

a seal strip contactable with the roof rail and fixedly attached to said member;

in which

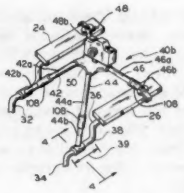
said molding section includes a slotted portion extending outwardly from and merging into said retainer section.

4,266,825

MOUNTS FOR ATTACHMENT OF DEVICES TO WHEELCHAIRS

Robert Le Donne, 447 Oakdale, Chicago, Ill. 60657

Filed Jun. 25, 1979, Ser. No. 51,435
Int. Cl.[3] A47C *7/62*
U.S. Cl. 297—194 **9 Claims**



1. A support device for mounting apparatus on a wheelchair comprising a plate member having pivotally attached thereto one end of each of four telescoping legs, means for removably fastening a ball-shaped member to the end of each of said legs opposite said plate, means for removably attaching said legs to said wheelchair containing a socket adapted to receive said ball-shaped member whereby said means can be rotatably and removably mounted on said legs, said means for attaching said legs to said wheelchair comprising a first type which includes a flat pad for resting on a flat surface and strap means connected at a first end to each of said legs with a quick release connector means on a second end of said strap, and a second type which includes an arcuate spring-clip embedded in plastic for snapping over a bar having a generally circular cross section.

4,266,826

IN-SITU RECOVERY OF CONSTITUENTS FROM FRAGMENTED ORE

Gordon B. French, Rifle, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Continuation of Ser. No. 505,276, Sep. 12, 1974, abandoned. This application May 24, 1976, Ser. No. 689,109
Int. Cl.[3] E21B *43/247*; E21C *41/10*
U.S. Cl. 299—2 **15 Claims**

1. An in-situ retort in an oil shale deposit comprising:

an elongated recovery zone extending along a vertical axis in the deposit comprising a fragmented permeable mass of particles containing oil shale, the recovery zone having a top, a bottom, and vertical sides extending between the top and bottom, the fragmented mass adjacent to the bottom having a larger void volume than the remainder of the fragmented mass;

a source of a gas capable of releasing shale oil upon exposure to the fragmented mass in the recovery zone;

means for coupling the source to the top of the recovery

zone to release the shale oil from the fragmented mass within the recovery zone; and

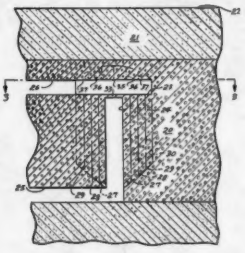
means for removing the released shale oil from the bottom of the recovery zone; and wherein

the bottom of the recovery zone has a surface that converges downwardly from the vertical sides to a point of convergence, and the removing means removes the released shale oil from the point of convergence.

6. A method for forming an in situ oil shale retort containing a fragmented permeable mass of particles containing oil shale in an oil shale deposit comprising the steps of:

establishing communication with a given level of the deposit;

removing oil shale at the given level to form a room having a floor plan corresponding to the horizontal cross section of the retort;



drilling down from the room a plurality of substantially vertical blasting holes corresponding to the depth of the retort below the room, the blasting holes drilled from one area of the room being longer than the blasting holes drilled from the remainder of the room, and the blasting holes drilled from the remainder of the room being at least two different lengths and arranged so that they are gradually shorter moving away from the one area to define an intact bottom boundary that slopes to a low area at the bottom of the blasting holes drilled from the one area of the room;

loading the blasting holes with an explosive charge;

detonating the explosive charge to form the retort containing the fragmented permeable mass and having an intact bottom boundary that slopes to the low area; and

providing means adjacent the low area for recovering shale oil from the retort.

4,266,827

INCOMPRESSIBLE FLUID TYPE ROCK BREAKER

Alwyn H. Cheney, 84 Valley View Dr., Highbury, Australia

Filed Oct. 12, 1979, Ser. No. 84,172

Claims priority, application Australia, Oct. 16, 1978, PD6384

Int. Cl.³ E21C *37/12*

U.S. Cl. 299—20 **12 Claims**

3. A rock breaker for fracturing rock or fracturable material comprising:

(a) a tool insertable in a hole in a rock or fracturable material and arranged to be fed through a supply line with an incompressible liquid to maintain a column of the said liquid in the said hole,

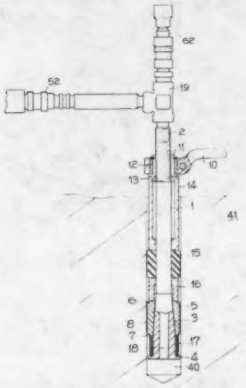
(b) means to supply liquid at a pressure sufficiently high to fracture the rock or fracturable material, and to suddenly apply the said high-pressure liquid to the said column of liquid in the said hole to fracture the said rock, said tool comprising,

(c) a non-rotational hollow stem having at one end portion a thread and means to allow liquid to be fed through the said hollow stem into said hole,

(d) an expansible collet encircling a tapered portion on the said hollow stem at the other end remote from the said thread,

(e) a threaded driving member engaging the said screw thread on the said stem arranged to be moved axially on the said stem when rotated about the said stem,

(f) a sleeve on the said hollow stem to move the said collet to expand the said collet when the said threaded member is moved on the said screw thread,



(g) a resilient expansible sealing member encircling the said stem intermediate the said collet and the said threaded end of the said stem, and

(h) means to expand the diameter of the said sealing member by compressing the said sealing member.

4,266,828

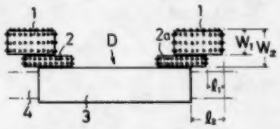
APPARATUS ON DRUM SHEARER FOR CUTTING THROUGH SAFETY WALL IN LONG WALL MINING

Shigeo Nakagima; Ken Takahashi, and Hajime Endo, all of Tokyo, Japan, assignors to Taiheiyo Engineering Inc., Tokyo, Japan

Division of Ser. No. 917,810, Jun. 22, 1978. This application Feb. 23, 1979, Ser. No. 14,766

Int. Cl.³ E21C *27/24*

U.S. Cl. 299—53 **6 Claims**



1. A coal mining apparatus for shearing a long wall face of a coal mine wherein at least one safety wall is left between at least one end of said long wall face and an intake or exhaust tunnel, comprising:

a drum shearer,

at least one shearing drum having a radius and a horizontal drum axis on said drum shearer;

means on said drum shearer for permitting extension of said shearing drum through said safety wall a distance greater than said radius at regular intervals to enter at least one of said tunnels and thereby to form at least one of intake and exhaust openings communicating with at least one of said tunnels leaving a plurality of safety pillars therebetween;

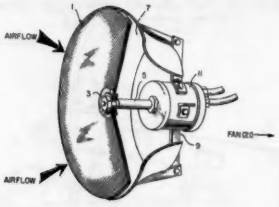
means on said drum shearer for supporting said horizontal drum axis of said shearing drum; and

said means for permitting extensions being shearing means at least on said means for supporting.

4,266,829
COMBINED ROTATING BED SCRUBBER AND WATER ELIMINATOR

Edward F. Divers, Pittsburgh, Pa., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Oct. 16, 1979, Ser. No. 85,451
Int. Cl.[3] E21C 35/02; B01D 46/18
U.S. Cl. 299—64 **3 Claims**



1. A combined air scrubber and water droplet eliminator assembly for removing dust particles from ambient air comprising:

a bed mount assembly having an opened housing with an entrance portion and an exit portion for allowing the air to enter and exit therethrough, the diameter of the entrance being larger than its exit;

a rotatable smooth surface fibrous bed made of uniform thickness and a layered mesh wire material, each wire being less than 0.01 of an inch in diameter and offset from the wire of adjacent lamina, said bed being mounted in the entrance portion of the housing and, when in an operative mode, bearing against the housing on all sides and so oriented as to receive a liquid spray and air from an air control means which forces ambient air into its smooth surface; and

a motor assembly for causing the bed to rotate in its mounted position at a speed of at least 1,000 revolutions per minute as air is forced towards it and liquid sprayed on it, the combined effect of the rotation and forced air causing an air seal to form totally around the edges of the bed causing it to bear against the entrance of the housing, whereby as the dust and water drop laden airstream flows into the bed dust particles above a predetermined size and moisture content are stopped by the bed and slung from its edge surface.

4,266,830
AUGER CONSTRUCTION PROVIDING REDUCED NOISE

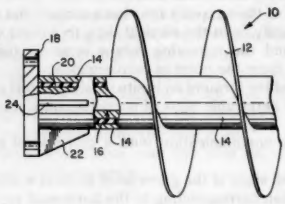
Thomas J. Retka, Lakeville, and Donald W. Schoen, St. Paul, both of Minn., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Jul. 21, 1977, Ser. No. 817,887
Int. Cl.[3] E21C 25/10
U.S. Cl. 299—87 **5 Claims**

1. In an auger for use in mining and like applications and comprising a rotatable helical cutting blade secured to an outer shaft, and a mounting flange for connecting the auger to a drive therefor, the improvement comprising:

an inner shaft disposed within a longitudinal bore in the outer shaft concentric therewith and connected to the mounting flange, said inner and outer shafts being spaced from each other along their longitudinal extents;

a plurality of gussets for connecting the mounting flange to the outer shaft; and

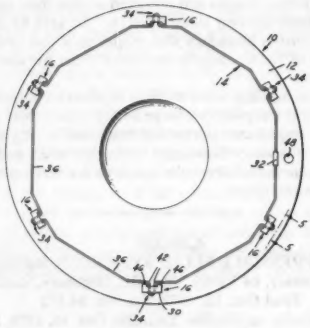


a tubular annulus of a solid noise dampening material located in the space between said shafts and extending substantially the entire length of said inner and outer shafts.

4,266,831
WHEEL COVER

Edwin E. Foster, and Thomas E. Foster, both of Austin, Tex., assignors to Michael Ladney, Jr., Grosse Pointe Shores, Mich.

Filed Jun. 19, 1979, Ser. No. 50,108
Int. Cl.[3] B60B 7/00
U.S. Cl. 301—37 PB **8 Claims**

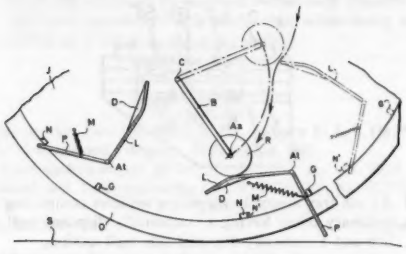


1. In a wheel cover of the type having a circumferentially resilient wire ring mounted on the inner side of the wheel cover body, the wire ring having a plurality of at least three generally equally circumferentially spaced U-shaped projections extending radially outwardly through and beyond radial guideways on the cover for interengaging an annular surface on the vehicle wheel when the cover is applied thereto, the radially outer ends of said projections comprising rounded bight portions, that improvement which comprises means forming a sharp radially outwardly extending biting face at the central portion of the radially outer side of at least two of said rounded bight portions, said biting edge faces being inclined at an acute angle to both a plane perpendicular to the axis of the cover and a central radial plane extending through the bight portion and the axis of the cover, the biting edge face on one of said projections being inclined to said perpendicular plane in a direction opposite to the inclination of the biting edge face on another projection.

4,266,832
VEHICLE WHEEL ANTI-SLIP DEVICE

Antoine Delaunay, Flers, and Guy Ecolasse, Saint-Lo, both of France, assignors to Michel Boyer, Cambremer, France

Filed Mar. 9, 1979, Ser. No. 19,121
Claims priority, application France, Mar. 6, 1978, 78 06596
Int. Cl.³ B60B *15/06, 15/10*
U.S. Cl. 301—48 **8 Claims**



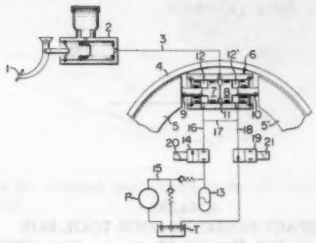
1. A vehicle wheel having an anti-slip device comprising a plurality of independently pivotable blades, a plurality of pivot shafts extending laterally from the wheel and spaced around the wheel, the blades being mounted on the respective pivot shafts, each blade comprising an active portion and a successive control portion between which portions the pivot shaft lies, control means for acting on each control portion to pivot the blade from a rest position to an operating position in which the active portion of the blade projects past the periphery of the wheel before the active portion penetrates the ground during rotation of the wheel, and a plurality of stops each defining the operating position of a respective blade by cooperation with its active portion, the mutual arrangement of the pivot shaft, the active portion, and the stop associated with each blade being such that the part of the active portion which initially penetrates the ground is ahead of the pivot shaft with respect to the direction of motion of the vehicle, the reaction of the ground urging the active portion against the stop and urging the control portion away from the control means, whereby the active portion, the stop, and the pivot shaft alone transmit to the wheel the force of penetration of the active portion into the ground thereby avoiding subjecting the control means to the force of penetration.

4,266,833
METHOD OF PREVENTING SKID OF WHEELS OF A VEHICLE

Makoto Sato, Kamifukuoka; Taiji Ohmori, and Yoshikazu Tsuchiya, both of Kawagoe, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 5, 1979, Ser. No. 1,214
Claims priority, application Japan, Jan. 18, 1978, 53-3848; Mar. 15, 1978, 53-30192
Int. Cl.³ B60T *8/08*
U.S. Cl. 303—106 **3 Claims**

1. A method of preventing the skidding of a wheel of a vehicle comprising: detecting the peripheral speed of a wheel of a vehicle and picking it up as a wheel-speed signal (Uwi); deriving a wheel-acceleration signal (U̇wi) representative of an acceleration of said wheel from said wheel-speed signal (Uwi); setting a first reference wheel-acceleration signal (V̇w1) representative of a positive acceleration and a second reference wheel-acceleration signal (V̇w2) of a level higher than that of said first reference wheel-acceleration signal, for comparison with said wheel-acceleration signal (U̇wi); comparing during braking, said wheel-acceleration signals (V̇w1, U̇wi, V̇w2); and controlling a braking torque exerted on said wheel such that said brake torque is held constant when the level of said wheel-acceleration signal (U̇wi) is higher than the level of said first reference wheel-acceleration signal (V̇w1) and lower than that of said second reference wheel-acceleration signal (V̇w2), while said braking torque is increased when the level of said wheel-acceleration signal (U̇wi) is higher than that of said second reference wheel-acceleration signal (V̇w2) and setting a reference wheel-speed signal (U_R) representative of a predetermined reference wheel speed for comparison with said wheel-speed signal (Uwi); setting a reference wheel-deceleration signal ($-\dot{V}wo$) representative of a negative acceleration for comparison with said wheel-acceleration signal (U̇wi), comparing during braking, said wheel-speed signal (Uwi) with

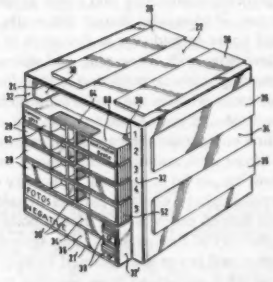


said reference wheel-speed signal (U_R), and also said wheel-acceleration signal (U̇wi) with both of said first reference wheel-acceleration signal (V̇w1) and said reference wheel-deceleration signal ($-\dot{V}wo$), and controlling said braking torque in a manner such that it is increased when the level of said wheel-speed signal (Uwi) is higher than that of said reference wheel-speed signal (U_R) and simultaneously the level of said wheel-acceleration signal (U̇wi) is lower than that of said first reference wheel-acceleration signal (V̇w1) and higher than that of said reference wheel-deceleration signal ($-\dot{V}wo$).

4,266,834
FILING ARRANGEMENT

Peter Ackeret, Küsnacht, Switzerland, assignor to Licinvest AG, Chur, Switzerland

Filed Jan. 12, 1979, Ser. No. 2,959
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1978, 2802459
Int. Cl.³ A47B *81/06;* **F16B** *12/00*
U.S. Cl. 312—8 **12 Claims**



1. A storage device for photographic prints and negatives therefor, comprising

a plurality of photographic print storage cassettes to be arranged in stacked relation to each other and individually supported to slide out of the stack, each of the cassettes entirely enclosing such prints therein and having means providing access into the cassette,

a plurality of sliding drawers arranged beneath and generally parallel to the cassettes, and

shelving element means defining a plurality of first open

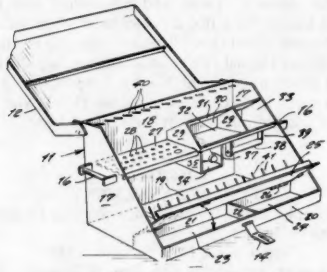
front compartments in superposed relation to each other and removably receiving the print storage cassettes therein in stacked relation to each other, the cassettes being supported on support surfaces beneath the compartments and extending from the sides of the compartments, said shelving element means also having framework means surrounding the drawers and having dividing shelves upon which the drawers are slidably supported, and the shelving element means including top and bottom with attaching means for securing to the top and bottom of similar shelving elements.

4,266,835

COMPACT POSITION LOCK TOOL BOX

LaVern Schmidt, P.O. Box 234, Montezuma, Kans. 60867

Filed Sep. 4, 1979, Ser. No. 72,035
Int. Cl.³ A47B *96/06*
U.S. Cl. 312—244 **5 Claims**



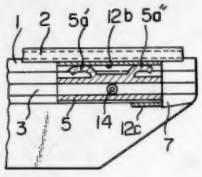
1. A compact position lock tool box, comprising in combination, a case within which a plurality of tool holding compartments are formed; a cover pivotally connected to said case; hinge means pivotally connecting said cover to said case; said case having a pair of triangular shaped side walls, said hinges connecting said cover to said case at first ends of said pair of side walls, a low front wall connecting said side walls, a rear wall also connecting said side walls and spaced from said low front wall, said cover when in the closed position resting upon an edge of each of said pair of side walls; said case further comprising a first compartment means at the bottom thereof in vicinity of said front wall, said first compartment means having a hinged lid, said hinged lid comprising a plurality of first pegs extending perpendicularly upward parallel to said low front wall when said hinged cover is in a closed position, at least some of said plurality of first page abutting against said cover of said case when said cover is in a closed locking position so that said hinged lid is prevented from pivoting to an opened position, said first pegs serving to hold thereby a plurality of tools; a plurality of second pegs extending from the top of said rear wall toward said front wall and each of said plurality of second pegs inclined upwardly away from the bottom of said case and extending to close proximity of said cover when said cover is in its closed locked position, whereby said plurality of second pegs serve to hold tools and the like thereon; whereby when said cover is in its closed locked position, the tools contained within said case are prevented by said cover from falling off or out of their respective tool holding means if said case is accidentally overturned.

4,266,836

AUTOMOTIVE ASH TRAY ASSEMBLY

Fumiyoshi Sato, Sayama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 1, 1979, Ser. No. 35,104
Claims priority, application Japan, May 15, 1978, 53-57879
Int. Cl.³ B60N *3/08;* **A47B** *88/00*
U.S. Cl. 312—246 **3 Claims**



1. An ash tray assembly for motor vehicles comprising:

a stationary cover having a horizontally disposed wall section and a vertically disposed side wall section;

an ash receptacle slidable in relation to said cover and having a vertically disposed side wall section which has an elongated slide projection extending laterally outwardly toward said vertically disposed side wall section of said cover;

a guide track member pivotally carried on said vertically disposed side wall section of said cover and having an axis of pivotal movement transverse to the direction of the sliding movement of said ash receptacle, said guide track member having an elongated guide channel which receives therein said slide projection of said ash receptacle so that said ash receptacle is slidable in relation to said cover;

biasing means born between said cover and said guide track member to urgingly and yieldably hold said guide track member at a position thereof in which said guide channel longitudinally extends substantially parallel to said horizontally disposed wall section of said cover; and

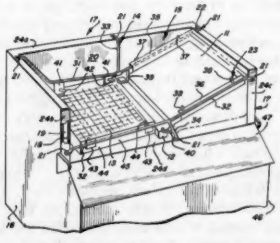
an abutment member in the form of a projection provided to said side wall section of said ash receptacle and releasably engageable with said horizontally disposed wall section of said cover to positively limit the extent of opening of said ash receptacle, the engagement of said abutment member with said horizontally disposed wall section of said cover being released by pivotal movement of said ash receptacle to permit removal of said ash receptacle from said cover.

4,266,837

ICE MAKER MOUNTING

Walter C. Barnard, White Bear Lake, and Kenneth J. Dahlstrom, St. Paul, both of Minn., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 17, 1979, Ser. No. 67,537
Int. Cl.³ A47B *81/00;* **F25D** *11/00*
U.S. Cl. 312—351 **17 Claims**



1. In an ice maker having a cabinet defined by an outer rigid

shell, an inner liner, and insulation between said shell and liner, said cabinet liner defining a chamber, and ice making apparatus including a plurality of components, the improvement comprising:

support means having supporting portions fixedly secured to said shell and extending exteriorly of said insulation free of connection to the liner, said support means defining mounting means disposed within said chamber, said ice making apparatus components being mounted to said mounting means to be disposed within said chamber in operative association with each other while being supported as a whole on the outer shell.

4,266,838

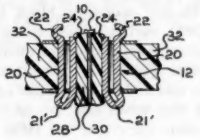
PIN SOCKET

Leslie Segrott, New Cumberland, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 871,684, Jan. 23, 1978, abandoned. This application Oct. 9, 1979, Ser. No. 82,551

Int. Cl.³ H01R *9/09*

U.S. Cl. 339—17 C **7 Claims**



1. A circuit board socket comprising:

(a) an eyelet, said eyelet defined by an elongate hollow conductive metal body having a generally cylindrical configuration, the body having open first and second ends,

(b) at least three spaced-apart spring arms extending from said first end of the eyelet, each arm having a reverse bend away from said first end forming an acute angle with the eyelet body, each of said arms having a greater physical length than the eyelet so that each arm protrudes above the eyelet when the eyelet is mounted in a circuit board,

(c) each spring arm portion forming the acute angle with the eyelet body being straight except for inwardly hooked ends located adjacent the second end of the eyelet when mounted in a circuit board to insure mechanical retention of the socket in the circuit board.

4,266,839

ZERO INSERTION FORCE TOGGLE LINK CONNECTOR

Paul W. Aikens, Mechanicsburg, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 6, 1979, Ser. No. 55,376

Int. Cl.³ H01R *9/09, 13/629*

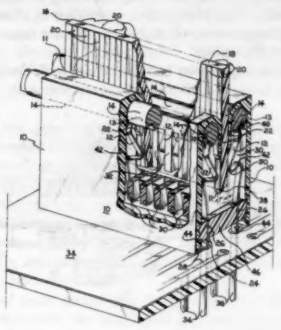
U.S. Cl. 339—75 MP **6 Claims**

1. A zero insertion force type connector for electrically engaging a printed circuit board, comprising:

(1) a dielectric housing having an elongated slot for receiving a printed circuit board and means for guiding said board into the interior of said housing,

(2) at least one toggle rod parallel to said slot in said housing; and

(3) a plurality of elongated curved uniformly resilient spring metal terminals having first and second ends and an intermediate portion, said first end of each terminal movable in and retained within a groove in said toggle rod, said second end of each terminal extending through a separate channel within said housing and being available for electrical contact with another electrical device, said intermediate portion of each said terminal being engageable and disengageable from electrical contact with said circuit board in the interior of said housing by rotation of said toggle rod and in response to movements of said first end



of the terminal over center in the groove of said toggle rod.

4,266,840

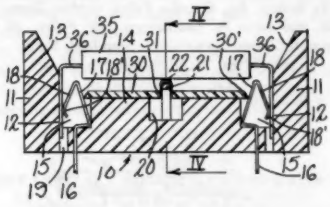
CIRCUIT HOLDER

Jack Seidler, 59-40 15th St., Flushing, N.Y. 11357

Filed Oct. 29, 1979, Ser. No. 89,021

Int. Cl.³ H01R *13/639*

U.S. Cl. 339—75 M **5 Claims**



1. A holder for an integrated circuit module comprising a base having spaced parallel channels adapted to receive the terminals of an integrated circuit module, an elongated central platform extending between said channels, arrays of resilient contacts in each channel normally resting out of the path of circuit terminals to be held, a separate arched plate of resilient material having opposite parallel edges resting on said platform and disposed adjacent said arrays of contacts, means for locking the plate in flattened position, the plate being so proportioned that it transition from arched to flattened causes said edges to project into respective channels and thereby push the contacts into terminal engaging position.

4,266,841

HIGH VOLTAGE CABLE TERMINAL

Cy E. Sherwood, Bainbridge, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 25, 1979, Ser. No. 88,430

Int. Cl.³ H01R *13/62;* **H01T** *13/06, 13/20*

U.S. Cl. 339—89 C **9 Claims**

1. An electrical terminal for the end of an insulated high voltage electrical conductor cable comprising:

elongated annular insulating means surrounding and extending along the end of the insulated cable;

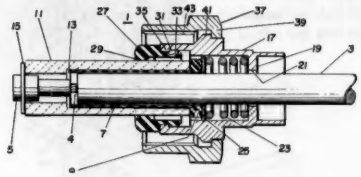
an electrical contact affixed to the end of the electrical conductor in the insulated cable;

means for securing the electrical contact to the free end of the elongated annular insulating means;

an elongated annular ferrule slidable on the cable and over

the insulating means, said ferrule having a radial, inwardly directed flange adjacent the end thereof remote from the end of the cable, said flange defining an aperture larger in diameter than the cable but smaller in diameter than the insulating means, such that the ferrule cannot slide off the end of the cable;

a single biasing means between the ferrule flange and the end



of the insulating means remote from the cable end for biasing the insulating means axially away from the flange;

an elongated annular electrically insulating grommet having a flexible internal annular lip which slidably engages the annular insulating means and also having an external portion which engages said ferrule; and

a coupling nut which engages a shoulder on the ferrule for securing the terminal to a mating receptacle.

4,266,842

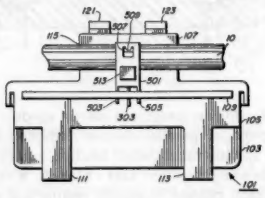
TRANSMISSION LINE ACTIVE COAXIAL TAP

Robert F. Dillon, Jr., Rancho Palos Verdes; James J. Hall, Encino, and Leon N. Zamfirescu, San Pedro, all of Calif., assignors to Zerox Corporation, Stamford, Conn.

Filed Sep. 17, 1979, Ser. No. 76,059

Int. Cl.[3] H01R *4/24*

U.S. Cl. 339—97 P **2 Claims**



1. Coaxial cable connection apparatus wherein the improvement is characterized by:

a metal band member (**501**) in a substantially U-shaped configuration, the radius of curvature of said band member being substantially equal to the radius of curvature of a coaxial cable (**10**) to which said apparatus is to be connected without cutting the cable, said band member having (a) at least two inwardly pointed prongs (**509, 511**) along the curved portion thereof to pierce the cable and contact an outer braided conductor (**12**) of the cable (**10**), (b) a rectangular hole (**513, 515**) in each straight portion of said member, and (c) at least two legs (**503, 505, 507, 508**) extending outwardly from and pointing in the same direction as each straight portion of said member,

an insulating mounting block (**401**), said mounting block being substantially rectangular with two arms (**403, 405**) extending out from opposite sides of said block (**401**), said arms being undercut to allow a locking arrangement when said mounting block is mounted in said band member (**501**) with said armss (**403, 405**) protruding through said holes (**513, 515**) of said band member (**501**), the top surface of said mounting block (**401**) being curved to also be substantially equal to the radius of curvature of said cable, such that when said band member is put around said coaxial cable and said mounting block is mounted to the band member and against said cable, the band member and mounting block completely surround the coaxial cable in a fixed, locked configuration,

an electrical probe (**301**) for installation in a hole (**409**) in said mounting block (**401**), said probe (**301**) having a center conducting metal electrode, one end of which is pointed, a cylindrical, tubular shaped insulator (**307**) surrounding the center electrode (**303**), said insulator being tapered at the end of the insulator adjacent the pointed end of said center electrode, said hole (**409**) and insulator (**307**) having matching screw threads for installation of said probe into the cable via the mounting block (**401**), such that as said probe (**301**) is screwed into the mounting block (**401**) the pointed end of the center electrode (**303**) pierces an outer cover, the braided outer conductor, and an inner insulating portion, respectively, of the cable to a position where the pointed end of said conductor comes into touching and electrical contact with a center conductor of said cable, the other end of said center electrode (**303**) and the extensions (**503, 505, 507, 508**) of said band member (**501**) providing the signal paths to and from said coaxial cable, and

a connector box (**101**) in which is mounted said electrical probe (**301**), said mounting block (**401**) and said band member (**501**), said box (**101**) being in three sections, a bottom section (**103**), a cover or middle section (**105**), and a top section (**107**), said top section being hingedly mounted to said middle section and adapted to receive the cable such that when said top section is closed to the middle section, the entire box (**101**) is securely fixed to said cable, and wherein said cover section is hingedly mounted to said bottom section, said bottom section containing connection apparatus for connecting said cable electrically to a using device, such that when said middle section is closed to the bottom section, the cover is securely closed over said connection apparatus.

4,266,843

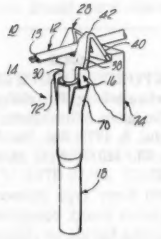
INSULATION DISPLACING ELECTRICAL CONTACT AND METHOD OF MAKING SAME

Edward K. Marsh, and Dean R. Nelson, both of Sidney, N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Sep. 24, 1979, Ser. No. 78,418

Int. Cl.[3] H01R *11/22, 25/06, 43/04*

U.S. Cl. 339—97 R **19 Claims**



1. An electrical contact adapted for mating with an insulated electrical wire comprising:

an elongated body having an axial passage extending completely therethrough;

a holder including,

an elongated electrical conductor portion having an axial passage, and

a flanged portion connected to the conductor portion in electric circuit relationship, said flanged portion having a slot extending therethrough and having two pairs of opposing stripping surfaces defining said slot for stripping insulation from an electrical wire inserted through

said slot at two stripping positions spaced apart a first distance and having two pairs of opposing gripping surfaces further defining said slot for holding the stripped wire in said slot at two holding positions spaced apart a second distance different than the first distance in electric circuit relationship with said flanged portion; and

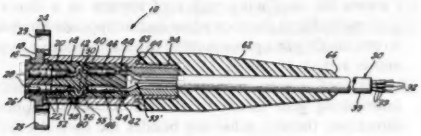
electrical conducting wires axially aligned and axially mounted within the passage of said conductor portion, each of said wires including an end portion that terminates in an acutely angled surface, said conductor portion being axially aligned and axially mounted within the passage of the body so that the body extends beyond the end of the conductor portion opposite the flanged portion and beyond the ends of said wires.

4,266,844

HIGH STRENGTH SUBMERSIBLE ELECTRICAL CABLE AND CONNECTOR ASSEMBLY

Paul Chelminski, Norwalk, Conn., assignor to Bolt Associates, Inc., Norwalk, Conn.

Filed Aug. 20, 1979, Ser. No. 67,768
Int. Cl.³ H01R *3/00, 13/58*
U.S. Cl. 339—218 M **5 Claims**



1. A high strength submersible marine seismic surveying electrical cable and connector assembly adapted to be coupled to solenoid-valve operated high pressure air guns and adapted to be towed through the water behind a ship while connected to an air gun for marine seismic surveying comprising:

a submersible electrical cable having a plurality of insulated high tensile strength electrical conductors extending longitudinally therein generally near the axis thereof and each being individually sheathed in insulation with a layer of insulation surrounding all of the individually insulated conductors;

a submersible connector having a metal sleeve member with a contact retainer formed of dielectric material mounted in one end of said sleeve member holding a plurality of electrical contacts, said connector being adapted to be connected to a solenoid valve on high pressure air gun apparatus for marine seismic surveying;

said metal sleeve member having an internal annular shoulder facing toward said one end in which said contact retainer is mounted;

a non-conductive rigid anchor plug of tough, strong insulation material mounted within said sleeve body and having a plurality of electrical connector elements seated therein;

said non-conductive anchor plug being seated against said internal annular shoulder for resisting movement in a direction away from said one end of said sleeve member;

said non-conductive anchor plug having internal shoulders facing toward said one end of said sleeve member and said connector elements being seated against the respective internal shoulders in said anchor plug for resisting movement in a direction away from said one end of said sleeve member;

the ends of the conductors of said cable extending into said sleeve member through its cable end and being bared and being secured in the respective connector elements in said anchor plug for mechanically and electrically securing said plurality of high tensile strength electrical conductors in said anchor plug for resisting tension stress on said cable in a direction away from said sleeve member and for electrically insulating said conductors from each other and from said metal sleeve;

a plurality of small gauge electrical conductors individually coupled between the respective electrical connector elements and the respective electrical contacts in said retainer;

said sleeve member having a port therein for filling the interior of said sleeve member with potting insulating material;

means for plugging said port watertight after the interior of the sleeve member has been filled with potting material; and

an insulating tapered stiffly flexible jacket surrounding said electrical cable and surrounding the cable end of said sleeve member where said electrical cable enters said sleeve member for providing flexural and torsional stress transition between said cable and said sleeve member of said connector assembly;

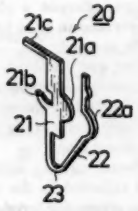
whereby said submersible electrical cable and connector assembly can be connected to a solenoid-valve operated air gun and can be towed through the water for carrying out marine seismic surveying operations.

4,266,845

RESILIENT CONTACT MEMBER OF JACK FOR USE IN CONJUNCTION WITH A PIN-PLUG

Kazuhiro Ishikawa, Tomioka, Japan, assignor to Iizuka Electric Industry Company Limited, Gunma, Japan

Filed Aug. 30, 1979, Ser. No. 71,163
Int. Cl.³ H01R *13/12*
U.S. Cl. 339—258 R **4 Claims**



1. A resilient contact member of an electrical jack for use in conjunction with a pin-plug comprising:

a fixed leg portion for securing the contact member to a housing of the jack;

a movable leg portion extending substantially in parallel with a fixed leg portion and including a semicircularly bent portion projecting in a direction opposite to the fixed leg portion;

a substantially U-shaped portion for coupling one end of the fixed and one end of the movable leg portions with each other; and

a projection extending from the fixed leg portion toward the semicircularly bent portion of the movable leg portion and having such a length that an excessive deformation of the

movable leg portion can be prevented by an engagement of a free end of the projection with the semicircularly bent portion of the movable leg portion; wherein said fixed leg portion, movable leg portion, U-shaped portion and projection are integrally formed by punching a metal plate and said movable leg portion is resiliently bent in a plane of the metal plate.

4,266,846

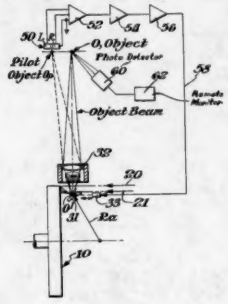
TWO-DIMENSIONAL SCANNERS

Charles S. Ih, Newark, Del., assignor to University of Delaware, Newark, Del.

Continuation-in-part of Ser. No. 757,901, Dec. 28, 1976, abandoned. This application Nov. 17, 1978, Ser. No. 961,652

Int. Cl.[3] G02B *27/17*

U.S. Cl. 350—3.71 6 Claims



1. Improved apparatus for achieving two-dimensional holographic scanning of an object comprising:

(a) a rotatable disc having a face, said disc being rotatable about an axis perpendicular to said face of said disc, said face having secured thereon a plurality of holograms, each hologram prepared so as to focus to a specific point on an object to be scanned;

(b) means for rotating said disc;

(c) means for illuminating said holograms with light emanating from a light source of coherent radiation, said holograms being so illuminated as they pass through said light during rotation of said disc;

(d) an auxiliary reflector causing light diffracted from said holograms to be reflected to the object to be scanned, thereby achieving means for serial multiplex scanning of said object during rotation of said disc;

wherein the improvement comprises

(e) means for changing the position of said auxiliary reflector in order to change the position of the point of focus of each hologram on the object to be scanned, thereby achieving field multiplexing, whereby, during a first set of revolutions of said disc, a first field of points on said object is scanned, and the position of said auxiliary reflector is then changed, thereby displacing the focus points of said holograms on said object such that, upon a second set of revolutions of said disc, a second field of points on said object is scanned, and so on, thereby providing apparatus for achieving two-dimensional field and serial multiplex scanning of said object.

4,266,847

APPARATUS FOR LINE-SCANNING OF LARGE IMAGE FIELDS

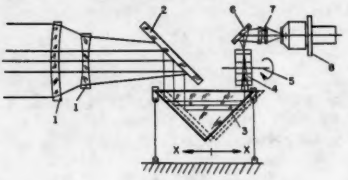
Josef F. Menke, Glücksburg, Fed. Rep. of Germany, assignor to ELEKTRO-OPTIK GmbH & Co. KG, Glücksburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 968,419, Dec. 11, 1978, abandoned. This application Oct. 23, 1979, Ser. No. 87,339

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1977, 2755094

Int. Cl.[3] G02B *27/17*

U.S. Cl. 350—6.6 6 Claims



1. In an apparatus for optical line scanning of large image fields comprising in combination a roof mirror for scanning the image field in a first coordinate direction with a conventional optical means for scanning the image field in a second coordinate direction, the improvement comprising:

(a) at least two roof mirrors employed for extending the length of the scanned line;

(b) roof edges of said roof mirrors extending in parallel;

(c) means for oscillating said roof mirrors in a direction perpendicular to the roof edges and in opposite directions to one another in a plane parallel to each respective hypotenuse; and

(d) said roof mirrors mounted on support means having interlinking gear means to execute motion in opposite directions, thereby achieving besides the optical effect a complete weight compensation.

4,266,848

OPTICAL SYSTEM FOR NIGHT-VISION GLASSES

Franz Schlegel, Munich, Fed. Rep. of Germany, assignor to Optische Werke G. Rodenstock, Munich, Fed. Rep. of Germany

Filed Feb. 23, 1979, Ser. No. 14,438

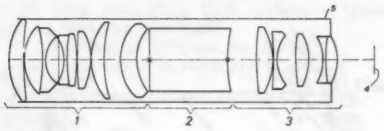
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1978, 2808043

Int. Cl.[3] G02B *13/16, 23/12*

U.S. Cl. 350—8 14 Claims

1. An optical system for night-vision glasses having a long focal length and a large image angle comprising objective lens means having a structural length less than 1.6 f and an aperture ratio larger than 1.2, said objective lens means having a high distortion with an image angle of about 50°, an image amplifier means for receiving an image from said objective lens means

for providing an amplified image output, and viewing optic means for receiving the amplified image output and for compensating for the distortion of said objective lens means to provide a substantially distortion-free image to a viewer.

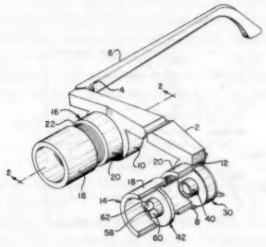


4,266,849

OPTICAL OBJECTIVES

David A. Warner, 100 Memorial Dr., Cambridge, Mass. 01020

Filed Mar. 16, 1977, Ser. No. 778,314
Int. Cl.[3] G02B *5/122, 17/08, 23/06*
U.S. Cl. 350—27 **1 Claim**



1. An optical system comprising:

an entrance pupil;

a concave reflector positioned to receive and reflect light transmitted by said entrance pupil;

retro-directive reflector means positioned to receive light reflected by said concave reflector and to form an erect real image at a plane within said system; and

refractive ocular means positioned to receive light reflected by said retro-directive reflector means for viewing the erect image formed at said plane;

said retro-directive reflector means being a corner reflector with a curved concave surface located opposite to its apex and said main mirror having a focus which is located between said curved concave surface and the virtual focus of said corner reflector; and

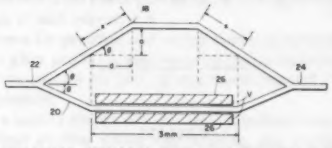
the apex of said corner reflector being truncated and having an end surface that is adapted to absorb light, with the truncation being limited so that less than about 10% of the light entering the corner reflector is absorbed at said end surface.

4,266,850

INTEGRATED BIAS FOR WAVEGUIDE AMPLITUDE MODULATOR

William K. Burns, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 28, 1980, Ser. No. 116,173
Int. Cl.[3] G02B *5/14; G02F 1/00*
U.S. Cl. 350—96.14 **3 Claims**



1. An interferometric, waveguide, amplitude modulator for conducting optical energy, comprising:

first and second waveguide arms, said arms having a common input and a common output, said first waveguide arm having an increased physical length, Δ, relative to said second waveguide arm, said length Δ being defined by

$$\Delta = \pi/(2Kn),$$

where

$K = 2\pi/\lambda$, said K being the free-space wavevector,

λ is the free-space wavelength of the optical energy, and

n is the index of refraction of a material from which said modulator is made,

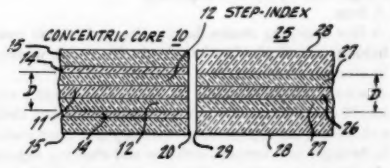
said length, Δ, providing an integral phase bias of $\pi/2$ radians to said modulator for producing a linear response to a small (approximately less than 100 volts) applied voltage.

4,266,851

COUPLER FOR A CONCENTRIC CORE OPTICAL FIBER

Glenn C. Salisbury, Roanoke, Va., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 6, 1979, Ser. No. 91,914
Int. Cl.[3] G02B *5/14*
U.S. Cl. 350—96.15 **10 Claims**



1. A coupling apparatus for optical fibers, comprising:

a longitudinal core fiber, having a cross section consisting of a series of annular layers, with an inner central layer manifesting an inner light conducting core of a given diameter, surrounded by an annular isolation zone of a given width and fabricated from a borosilicate glass, with said zone surrounded by an outer light conducting annular core concentric with both said inner core and said zone, said fiber having an end face of said cross section,

a step index fiber having an end face containing an annular cross section juxtaposed with said end face of said concentric core fiber, with an inner light conducting central core of relatively the same diameter as said inner core of said concentric fiber, with said central core surrounded by an annular cladding layer relatively congruent with said isolation zone and fabricated from the same type of glass

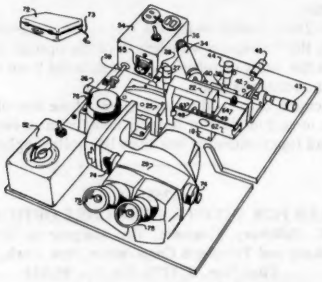
as said isolation zone, said cladding layer surrounded by an annular light conducting substrate layer aligned with and facing said outer annular core, whereby light propagating in said inner core of said concentric core fiber is coupled to said central core of said step index fiber and light propagating in said outer core of said concentric core fiber is propagated in said substrate layer and means coupled to said substrate layer of said step index fiber responsive to light propagating therein and therefore responsive to light propagating in said outer light conducting annular core.

4,266,852

FIBER OPTICS WELDER HAVING MOVABLE ALIGNING MIRROR

Robert W. Higgins, Los Alamos, and Roger E. Robichaud, Jemez Springs, both of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 9, 1979, Ser. No. 11,018
Int. Cl.[3] G02B 5/14; B23K 9/00
U.S. Cl. 350—96.20 **2 Claims**



1. In a system for joining two lengths of a fiber optic waveguide together, apparatus comprising:

a. A base,

b. A first clamping means fixedly attached to said base for holding an end of a first length of a fiber optic waveguide in a vertical orientation,

c. A second clamping means for holding an end of a second length of said fiber movably mounted to said base through a three-axis micropositioner, whereby said fiber ends may be brought into vertical, colinear and abutting alignment,

d. A stereoscopic microscope for viewing said fiber ends, mounted on said base,

e. A pair of electrodes mounted to said base through a three-axis micropositioner whereby said electrode pair may be moved into precise alignment with the junction between said fiber ends for welding said fibers and out of the way during alignment of said fiber ends,

f. A mirror mounted to said base through means permitting said mirror to be moved into and retracted out of a position alongside of the fiber ends and at a 45° angle to the optical axis of said microscope whereby two right orthogonal views of the fiber ends are provided through said microscope while said ends are aligned and the mirror may be moved out of the way during alignment of said electrodes, and

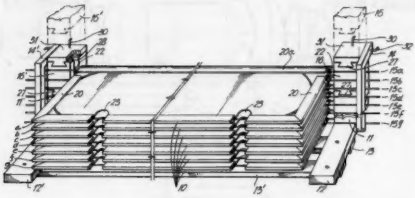
g. Means for establishing an arc between said electrodes for welding said ends together.

4,266,853

DEVICE FOR ORGANIZING OPTICAL FIBERS AND THE LIKE

Terence N. Hutchins, and Francois C. Meunier, both of Kirkland, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Mar. 12, 1979, Ser. No. 19,512
Int. Cl.[3] G02B 5/14
U.S. Cl. 350—96.20 **10 Claims**



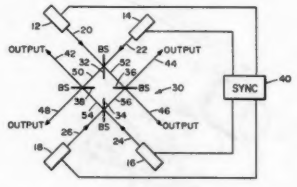
1. A device for organizing optical fibers and the like comprising a plurality of stacked tray-like supports having partially turned-up edges for retaining a looped fiber portion, each tray-like support separately hinged to a carrier and having a width at least equal to twice the minimum bending radius specified for that fiber for accommodating continuous longitudinal slack in the fiber.

4,266,854

SYSTEM FOR INCREASING LASER PULSE RATE

Kenneth Avicola, Richland, Wash., assignor to Jersey Nuclear-Avco Isotopes, Inc., Bellevue, Wash.

Division of Ser. No. 660,650, Feb. 23, 1976, Pat. No. 4,073,572.
This application Jan. 16, 1978, Ser. No. 869,817
Int. Cl.[2] G02B 27/14
U.S. Cl. 350—171 **12 Claims**



1. A system for increasing laser pulse rate comprising:

means for generating a plurality of input beams of pulsed laser radiation;

means for synchronizing the pulses of laser radiation in each of said plurality of input beams to provide a different time of occurrence for each pulse in each of said plurality of input beams;

an array of plural sets of beam splitter elements each containing a plurality of beam splitter elements;

said plural sets including an input set of plural beam splitter elements, with each input beam splitter element receiving on opposite surfaces the pulsed laser radiation from two of said plurality of input beams;

the splitter elements of said array being positioned to provide a plurality of output beams of pulsed laser radiation having the pulses of the plurality of input beams interleaved, and each output beam sharing the power in each pulse;

said plural sets further including an output set of plural output beam splitter elements with each output beam splitter element receiving on opposite surfaces the radiation from a beam splitter element of one of said plural sets

other than the output set, and providing partial transmission and partial reflection of the radiation incident on the opposite surfaces to provide two of said output beams of pulsed laser radiation of said plurality of output beams;

said output beams each having pulses occurring at an augmented rate, and each containing a portion of radiation from each of the plurality of input beams.

4,266,855

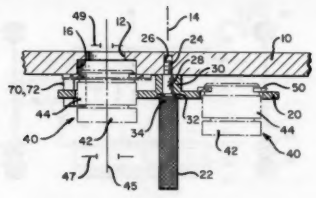
QUICK CHANGE LENS SYSTEM

Siegfried H. Mohr, Santa Clara, Calif., assignor to Quantor Corporation, Mountain View, Calif.

Filed Sep. 24, 1979, Ser. No. 78,420

Int. Cl.³ G02B *7/16; G03B 21/14, 27/52*

U.S. Cl. 350—254 **12 Claims**



1. A lens mounting system for a microform viewer and/or recorder comprising:

support means having an aperture therethrough,

storage means spaced from said support means and adapted to carry a plurality of lens assemblies, each assembly positionable in alignment with said support means aperture,

mounting means carrying said storage means and connected with said support means for enabling positioning of said storage means to position a selected one of said lens assemblies in alignment with said support means aperture,

means including clamping means engageable by a selected lens assembly for positioning said selected one of said lens assemblies in relation to said support means for enabling focusing of the lens thereof, and

means adjacent said storage means for identifying the selected one of said lens assemblies.

4,266,856

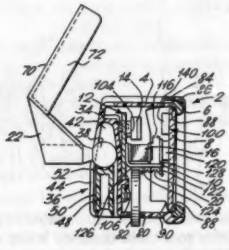
REAR VIEW MIRROR

Basil E. Wainwright, 80 Greenaleigh Rd., Yardley Wood, Birmingham, England

Continuation-in-part of Ser. No. 926,428, Jul. 20, 1978, abandoned. This application Jan. 9, 1979, Ser. No. 2,084

Int. Cl.³ G02B *17/00*

U.S. Cl. 350—281 **15 Claims**



1. A rear view mirror for a motor vehicle comprising

(a) a housing including

(1) a back plate portion (**4**); and

(2) a front frame portion (**6**) connected with said back plate portion to define a chamber, said housing containing a recess in the inner surface of the lower portion thereof, said recess extending parallel with said front plate portion;

(b) a mirror (**8**) pivotally mounted within said housing chamber, the lower edge of said mirror being arranged within said housing recess, said mirror being operable to pivot between a normal position wherein said mirror is arranged adjacent and generally parallel to said front frame portion, and an anti-glare position wherein said mirror diverges from said front frame portion in the direction of the upper edge of said mirror; and

(c) means for pivoting said mirror between said normal and anti-glare positions, said pivoting means including

(1) means (**20**) for biasing said mirror toward its normal position;

(2) a unitary electrical assembly (**12**) mounted on said back plate portion within said housing, said assembly containing an electrical circuit including

(a) a printed circuit board (**104, 161**);

(b) a photosensor (**14**) mounted on said board for sensing light incident on said mirror,

(c) a solenoid coil (**16**) connected with said photosensor;

(d) means (**168, 169**) for supplying a voltage across said photosensor, said photosensor producing a voltage output corresponding with said incident light;

(e) reference voltage means (**82**) connected with said voltage supply;

(f) operational amplifier means (**177**) for comparing the photosensor output voltage with said reference voltage; and

(g) transistor means (**179**) responsive to the output of said operational amplifier for controlling the flow of current through said solenoid coil; and

(3) metallic plate means (**164**) mounted on the rear portion of said mirror, whereby when a sufficient amount of light strikes said photosensor, said solenoid coil generates a magnetic field which attracts said metallic plate means to pivot said mirror to its anti-glare position.

4,266,857

LIQUID OR GAS COOLED FLEXIBLE BEAM-COMPENSATING ADJUSTABLE CYLINDRICAL MIRROR

Hardy C. Svenson, Arlington, Va., assignor to The United States of America as represented by the Secretary of the Treasury, Washington, D.C.

Filed Jan. 30, 1980, Ser. No. 116,731

Int. Cl.³ G02B *5/10*

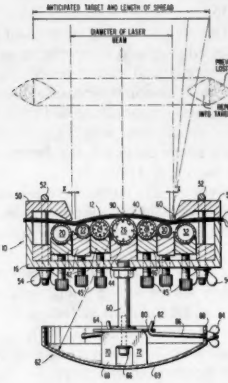
U.S. Cl. 350—295 **16 Claims**

1. A liquid or gas cooled laser mirror, comprising:

(a) a curved reflector element for spreading a beam of coherent laser light, and

(b) coolant conduit means in abutting relationship with said

reflector element for cooling said reflector element and for controlling the curvature of said reflector element,



wherein said coolant conduit means comprises a plurality of individually vertically adjustable conduits.

4,266,858

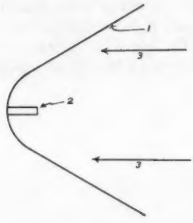
SOLAR CONCENTRATOR OF WIDE-ANGLE CAPABILITY

Beecher J. Holland, 600 Morison Ave., Kingsport, Tenn. 37660

Continuation of Ser. No. 822, Jan. 4, 1979, abandoned. This application Aug. 23, 1979, Ser. No. 68,891

Int. Cl.[3] G02B *5/10*

U.S. Cl. 350—296 **1 Claim**



1. A solar radiation concentrator which in sectional view consists of an assembly of (a) a concave reflector of circular section having tangential extensions and (b) a receiving-converting means which extends outward by less than one radius of said circular section from the base within the cavity formed by the reflector and symmetrically along its longitudinal center line, and wherein the receiving-converting means is coincident with the imaginary continuation of the reflector surface at the reflector base.

4,266,859

LIQUID CRYSTAL DISPLAY DEVICE

Seigo Togashi, Kawagoe, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Oct. 13, 1978, Ser. No. 950,986

Claims priority, application Japan, Oct. 14, 1977, 52-123041; Oct. 15, 1977, 52-123779

Int. Cl.[3] G02F *1/133*

U.S. Cl. 350—338 **9 Claims**

1. A liquid crystal display device comprising:

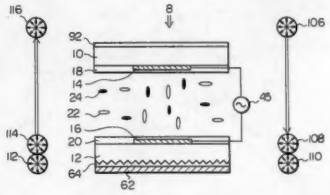
a first substrate having a display area constituted by a first transparent electrode formed on a first surface thereof;

phase retarding means having a display area constituted by a second transparent electrode formed on a first surface thereof;

a layer of nematic dichroic liquid crystal material comprising a mixture of nematic liquid crystal molecules and dichroic molecules inserted between said first substrate and said phase retarding means;

a first alignment layer disposed between said layer of nematic dichroic liquid crystal material and said first transparent electrode together with an area of said first surface of said first substrate outside said first transparent electrode, to cause said nematic liquid crystal molecules and dichroic dye molecules to align in a predetermined direction with respect to a plane of each of said first substrate and said phase retarding means;

a second alignment layer disposed between said second transparent electrode together with an area of said first



surface of said phase retarding means outside said second transparent electrode, to cause said nematic liquid crystal molecules and said dichroic dye molecules to align in said predetermined direction;

light diffusion means formed on a second surface of said phase retarding means external to said layer of nematic liquid crystal molecules and dichroic dye molecules;

light reflection means formed on said light diffusion means for reflecting light diffused from said light diffusion means; and

said phase retarding means retarding the phase of light impinging upon said light reflection means by one quarter of a wavelength at a predetermined wavelength of said light, said light passing through said phase retarding means both before and after being reflected by said light reflection means.

4,266,860

WIDE ANGLE ZOOM LENS SYSTEM HAVING SHORTENED CLOSEUP FOCAL LENGTH

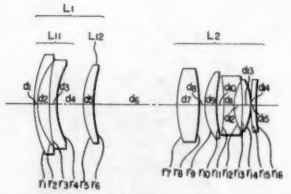
Kiyoshi Hayashi, Yokohama, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Aug. 30, 1979, Ser. No. 71,055

Claims priority, application Japan, Sep. 8, 1978, 53-109772

Int. Cl.[3] G02B *15/16*

U.S. Cl. 350—426 **9 Claims**



1. A wide angle zoom lens system capable of photographing objects from infinity to a close distance while maintaining an improved image-forming performance, said system comprising:

a first divergent lens group including a divergent forward portion and a convergent rearward portion disposed with a predetermined spacing from said forward portion, the

forward and rearward portions being movable relative to each other for focusing; and

a second convergent lens group disposed rearwardly of said first group, said first and second groups being movable relative to each other to effect a magnification change.

4,266,861

EYE FUNDUS CAMERA

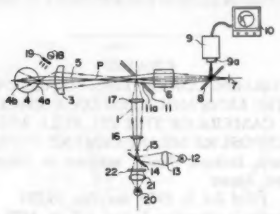
Seiji Sawa, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 9, 1978, Ser. No. 959,079

Claims priority, application Japan, Nov. 15, 1977, 52-137695

Int. Cl.³ A61B *3/10, 3/14;* **G03B** *29/00*

U.S. Cl. 351—7 **13 Claims**



1. An improved eye fundus camera for photographing the fundus of an object eye comprising:

an objective lens capable of optical positioning relative to the object eye and a photographic focal plane;

a wavelength selective filter for reflecting at least a first wavelength of light in a first band of wavelengths and transmitting at least a second wavelength of light in a second band of wavelengths other than the first band, the filter further being provided with a fully transmissive portion and being positioned relative to the eye and objective lens so that it is substantially conjugate to the front of the object eye with respect to the objective lens;

a first light source including at least a first wavelength for directing light toward the fundus of the object eye by way of the reflection on the wavelength selective filter, and

a second light source including at least a second wavelength for directing light towards the front of the object eye, whereby the light of the first light source reflected from the object eye to the wavelength selective filter is transmissible only through the fully transmissive portion thereof, and the light of the second light source reflected from the object eye to the wavelength selective filter is transmissible through any portion thereof.

4,266,862

REFRACTOMETER FOR THE AUTOMATIC OBJECTIVE DETERMINATION OF THE REFRACTIVE CONDITION OF AN EYE

Otto Trötscher, Aalen, and Erwin Wiedmann, Essingen, both of Fed. Rep. of Germany, assignors to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed Nov. 21, 1977, Ser. No. 853,542

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1976, 2654608

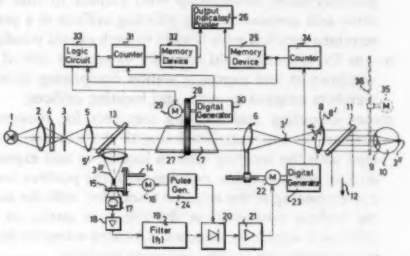
Int. Cl.³ A61B *3/10*

U.S. Cl. 351—14 **16 Claims**

1. Refractometer for the automatic objective determination of the condition of refraction of an eye, in which a test mark is focused by an optical image-producing system on the retina of the eye to be examined and the light reflected from the retina after passing through said image producing system and before reaching the test mark is reflected to a photoelectric receiver provided with a scanning device, characterized by the combination of the following features:

(a) the image-producing system contains a first lens and a second lens between which there is a parallel beam path and which produce a first intermediate image of the test mark, as well as a third lens which, in combination with the eye lens, produces a second intermediate image of the test mark on the retina of the eye;

(b) between the first and second lenses a partially transmitting mirror is arranged and, in the light-path of the latter, a lens corresponding to the first lens of the image producing system in such a manner that the light reflected by the retina produces a third intermediate image of the test mark outside the path of the illumination beam;



(c) at the location of this third intermediate image there is provided a scanning device which, together with a photoelectric receiver arranged behind it, produces a signal which is modulated in accordance with the position of the intermediate image;

(d) behind the photoelectric receiver there is provided an arrangement which converts the modulator signal into a control signal which is proportional to the deviation of the third intermediate image from the theoretical desired position;

(e) one the lenses of the image producing system is displaceable by means of a motor (22) to which the control signal is fed.

4,266,863

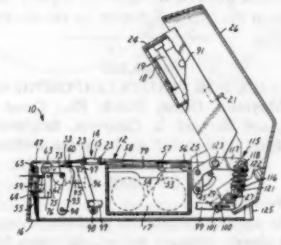
DEVICE FOR FORMING GRAPHICS

Elmont E. Hollingsworth, St. Paul; Wm. M. Shea, May Township, Washington County, and Daniel M. Spitzer, Jr., Hugo, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 17, 1979, Ser. No. 104,575

Int. Cl.³ B41B *13/00;* **G03B** *17/04*

U.S. Cl. 354—5 **9 Claims**



1. In a device useful for forming graphics such as letters, symbols or pictures along a strip of radiation sensitive material, said device comprising:

means for defining an exposure station;

means adapted for positioning a predetermined portion of a said strip at said exposure station; and

means adapted to be actuated at said exposure station for momentarily irradiating the predetermined portion of a said strip at said exposure station in a sharply defined graphic pattern, including:

a template comprising a thin radiation transparent member with a radiation blocking coating having sharply defined open areas corresponding in shape to graphics to be formed to provide radiation transmissive windows through said template, having a viewing opening adjacent each of said windows, and having for each of said windows a positive image of that window within said viewing opening, which image is positioned with a predetermined relationship with respect to that window; said template having locating orifices at a predetermined location with respect to each of said windows;

means for mounting said template to register one of the windows at said exposure station comprising locating members adapted to enter said locating orifices;

means mounting said locating members for movement between an exposure position with the window associated with the locating orifices located at said exposure station, and a preview position with the positive image corresponding to the window associated with the locating orifices positioned at the exposure station at the position in which the window is located when the locating members are in their exposure position;

radiation means for briefly irradiating the portion of the strip at said exposure station through the aligned window, comprising a flash lamp; means mounting said flash lamp for movement between a normal position spaced from said exposure station to afford visible inspection of said template and said radiation sensitive material portion at said exposure station, and an expose position with said lamp closely adjacent the exposure station;

means for operating said flash lamp upon movement of the lamp to its expose position; and

means coupled between said means mounting said lamp for movement and said means for mounting said template for positioning said locating members in said preview position when said lamp is in its normal position, and for positioning said locating member in said exposure position when said lamp is in its expose position; the improvement wherein:

said locating members are two spaced parallel upwardly projecting pins;

said windows and positive images on said template are in a rectangular array; and

said template has a different pair of locating orifices at a predetermined location with respect to each of said windows, with each pair of locating orifices being adapted to receive said locating members to register the associated window at the exposure station on the device.

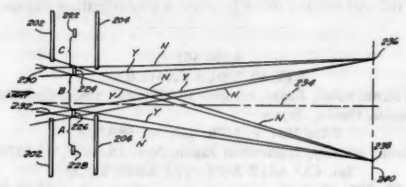
4,266,864

MASK DEVICE FOR PHOTOCOMPOSING MACHINES

Louis M. Moyroud, Delray Beach, Fla.; Grant T. Morgan, Bayshore, and Bernard A. Casanova, Brightwater, both of N.Y., assignors to Bobst, S.A., Lausanne, Switzerland

Filed Nov. 8, 1979, Ser. No. 92,466
Int. Cl.³ G03B *17/06*
U.S. Cl. 354—15 **10 Claims**

1. In or for a photocomposition machine having a character matrix with closely adjacent master characters for projection onto a recording surface, a lamp for selectively illuminating one of said characters for projection, a mask for preventing the projection of graphic matter adjacent a selected one of said characters, said mask comprising a first shield between said lamp and said matrix, and a second shield between said matrix and said recording surface, each of said first and second shields having an aperture aligned with the aperture in the other shield to transmit the image of said selected character, said mask and said matrix being movable with respect to one another in order



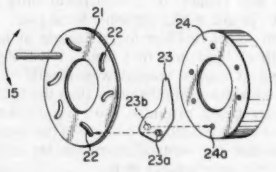
to select one among a plurality of characters on said matrix for projection.

4,266,865

DIAPHRAGM CORRECTING MEANS OF AN OBJECTIVE LENS MOUNTED ON A SINGLE LENS REFLEX CAMERA OF THE TTL FULL APERTURE EXPOSURE MEASUREMENT TYPE

Toru Fukuhara, Isehara, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Jul. 9, 1979, Ser. No. 55,557
Claims priority, application Japan, Jul. 26, 1978, 53-101796
Int. Cl.³ G03B *7/20*
U.S. Cl. 354—46 **8 Claims**



1. In an objective lens removably mountable with respect to a single lens reflex camera housing, said lens having a diaphragm member forming an aperture, and diaphragm driving means displaceable to stop down said diaphragm member in a range over which the area of said aperture is from maximum to minimum, said housing having a metering circuit for measuring the light transmitted through said lens when said aperture is maximum, the improvement comprising:

diaphragm correcting means provided on at least one of said diaphragm driving means and said diaphragm member to impart a correction of the stop down step number corresponding to the difference between a theoretical metering output calculated from the open F-value of said lens and the brightness of an object and the actual metering output of said metering circuit.

4,266,866

DIFFUSION TRANSFER CAMERA PROCESSOR

Dennis Dodge, Amherst, N.H.; Paul Matwey, Henrietta, N.Y.; Thomas M. Madigan, Pittsford, N.Y., and Robert H. Powers, Rochester, N.Y., assignors to Itek Corporation, Lexington, Mass.

Filed Oct. 22, 1979, Ser. No. 86,929
Int. Cl.³ G03B *17/50*
U.S. Cl. 354—84 **15 Claims**

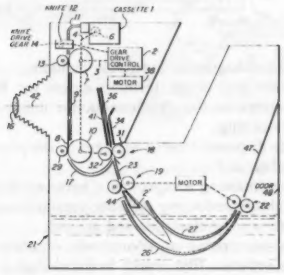
1. In a diffusion transfer camera-processor;

a. projection lens means (**16**) for projecting an image along an optical axis (**42**);

b. an imaging platen (**9**) for exposing a sheet of relatively stiff film to said image produced by said lens means;

c. storage station (**1**) for storing said film;

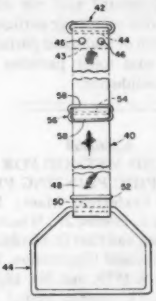
d. first film transport means (**7**, **13**, **6** and **29**) for driving said film from said storage station over said imaging platen so that an image may be thereafter projected upon the emulsion side of said film facing said optical axis;
e. knife means (**12**) for cutting said film;
f. second sheet transport means (**31**, **32**);
g. means for introducing the leading edge of a relatively flexible receptor sheet into an entrance portion of said second sheet transport means (**34**, **36**);
h. first guide means (**17**) for guiding the leading edge of said film from said first sheet transport means through said second sheet transport means, said first guide means being configured to reverse the direction of said film so that its emulsion side faces away from said optical axis after reversal thereof;
i. drive control means (**2**) for driving said second sheet transport means in a first direction to position the trailing edge



of said film adjacent said entrance portion of said second sheet transport means;
j. a processor bath (**21**) having third and fourth sheet transport means (**19**, **22**);
k. second guide means (**23**);
l. drive control means for driving said second sheet transport means in a second direction opposite said first direction for causing said film together with said receptor sheet to be driven into the entrance portion of said third sheet transport means via said second guide means; and
m. a lower third and upper fourth guide means (**26**, **27**) positioned within said processor bath between said third sheet transport means and said fourth sheet transport means for guiding said relatively flexible receptor sheet along said upper fourth guide means and said relatively stiff film along said lower third guide means and through said processor bath toward said fourth sheet transport means.

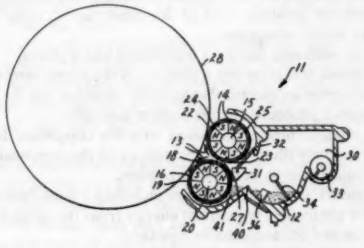
4,266,867
HOLD STEADY STRAPS
Christiaan Reeberg, 111-67 145th St., Jamaica, N.Y. 11435
Filed Jan. 4, 1980, Ser. No. 109,655
Int. Cl.³ G03B *17/00*; **A44B** *21/00*
U.S. Cl. 354—293 **2 Claims**

1. A hold steady strap for a camera user while taking a picture at eye level, comprising:
a relatively short longitudinal non-elastic strap member composed entirely of woven fabric material attached at one end to a sliding buckle, slided on an intermediate portion of said strap member so as to form an adjustable loop at the lower end of said strap,
a flat ring attached to the upper end of said strap, fitted with a freely rotatable screw adapted to fit a camera threaded opening,
a hook having a base carried by said loop at the lower end of said strap member, adapted to fit under the user's belt,
a flat ring keeper that is slidable on said adjustable loop for closing said loop on the base of said hook,
an auxiliary relatively long extension non-elastic strap member comprised of woven fabric throughout attached at one end to a sliding buckle, slided on an intermediate portion thereof so as to form an adjustable loop at the lower end of said extension member,
a flat loop attached to the upper end of said auxiliary strap



member, for selective engagement with said hook on the lower end of said relatively short strap member,
a foot stirrup formed of a wire piece bent to provide a shaft which is carried by the lower end of such loop, and
a flat ring keeper slidable on said loop for closing such loop on the shaft of said foot stirrup, whereby the extension strap member can be connected to the relatively short strap member for extending the length of the strap to the user's foot, as desired.

4,266,868
MULTIPLE ROLL DEVELOPING APPARATUS
Larry J. Bresina, St. Paul, and Richard D. Hipp, Rushseba Township, Chisago County, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jul. 16, 1979, Ser. No. 58,075
Int. Cl.³ G03G *15/09*
U.S. Cl. 355—3 DD **6 Claims**



1. An improved developing apparatus for applying one-part toner particles to a photoconductive surface in a copy machine, said apparatus comprising
A. a plurality of magnetic brushes arranged in a parallel spaced relationship so as to form an elongate nip area at their proximate surface, each of said brushes comprises
1. a magnetic shaft having poles arranged in a spaced relationship so as to form a circular array about said shaft,
2. a thin walled annular-shaped sleeve formed of nonmagnetizable material positioned around and proximate said magnetic shaft, and

3. means for mounting said magnetic shaft and said sleeve of said brush for relative rotational movement,

B. means for supplying toner particles to said brushes including means defining a reservior for said toner particles and an adjustably-mounted doctor blade disposed between said reservoir and one of said brushes to control the amount of powder carried by said one of said brushes, and

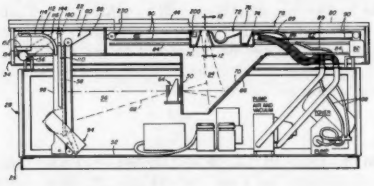
C. drive means affording relative rotation of said magnetic shafts and said sleeves to advance said toner particles from said doctor blade toward said nip area between said brushes so as to divide said toner particles at said nip area and transfer a portion of said toner particles to an adjacent brush and direct said toner particles on said brushes toward said photoconductor.

4,266,869

APPARATUS AND METHOD FOR MAKING LITHOGRAPHIC PRINTING PLATES

Manfred R. Kuehnle, Lexington, Mass.; Richard E. Cox, Nashua, N.H.; George B. Harris, Jr., Winchester, Mass.; Jess Forrest, Bedford, Mass., and Carl D. Hardy, Medfield, Mass., assignors to Coulter Systems Corporation, Ill.

Filed Feb. 9, 1979, Ser. No. 10,497
Int. Cl.[3] G03G *15/28*
U.S. Cl. 355—8 **47 Claims**



1. Apparatus for producing a toned image on an electrographic member for the purpose of making said member into a lithographic printing plate or for other use directly from a pattern which comprises:

A. an enclosure having a copyboard and a platen,

B. means for mounting a pattern on the copyboard and for securing an electrophotographic member on the platen with a photoconductive surface exposed,

C. movable means associated with the copyboard for progressively illuminating the pattern on the copyboard with radiant energy portion by portion,

D. means within the enclosure including a fixed optical train for projecting the radiant energy from the pattern to the exposed photoconductive surface,

E. a carriage in the enclosure adapted to move in one direction across the photoconductive surface and having charging means, a slit and toning means arranged in that order, the carriage obstructing the photoconductive surface from said projected radiant energy when it is moving in said one direction but for the slit and

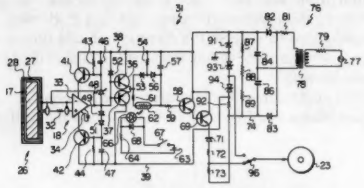
F. means for operating the progressive illuminating means and for moving said carriage in said one direction substantially continuously and in synchronism whereby to image the electrophotographic member with said pattern by charging, exposing and toning transverse areas of said photoconductive surface progressively over its full extent as the carriage moves in said one direction.

4,266,870

ELECTROSTATOGRAPHIC APPARATUS COMPRISING DEVELOPING BIAS MEANS

Tadahiro Eda; Susumu Tatsumi, and Chikara Imai, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 6, 1979, Ser. No. 17,856
Claims priority, application Japan, Mar. 9, 1978, 53-26934; Jun. 27, 1978, 53-78257; Jun. 30, 1978, 53-79654
Int. Cl.[3] G03G *15/00*
U.S. Cl. 355—14 D **6 Claims**



1. An electrostatographic apparatus including a photoconductive member and image forming means for forming an electrostatic image on the photoconductive member, characterized by comprising:

an electrode disposed closely adjacent to the photoconductive member; and

means for maintaining a capacitance between the electrode and the photoconductive member greater than a capacitance between the electrode and ground;

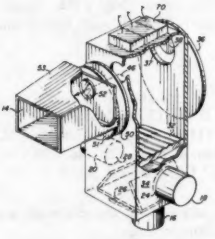
said means comprising an electrically conductive shield having a separate first shield member disposed closely adjacent to and covering a surface of the electrode which faces away from the photoconductive member and a separate second shield member which surrounds a periphery of a surface of the electrode which faces the photoconductive member, and a voltage follower having an input connected to the electrode and an output connected to the shield.

4,266,871

APPARATUS FOR VISUALLY DUPLICATING GEMSTONES

Thomas F. Ritzi, Daytona Beach, Fla., assignor to Gem Instruments Corporation, Santa Monica, Calif.

Filed Jul. 28, 1978, Ser. No. 928,771
Int. Cl.[3] G01N *21/00*
U.S. Cl. 356—30 **33 Claims**



1. Apparatus for reproducing the color and intensity of a selected gemstone, comprising:

a housing having a viewing port;

a source of light of variable frequency within said housing;

means for selectively changing the frequency of said light to obtain variations in the color of said light passing through said port;

means for changing the intensity of said light passing through said port, whereby changes in the intensity of

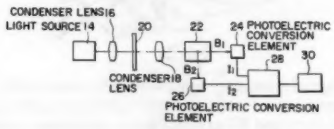
colored light exiting said viewing port may be controlled to conform with said selected gemstone; and

imaging means optically coupled between said light source means and said viewing port for visually duplicating the structural appearance of the selected gemstone.

4,266,872
METHOD OF MEASURING THE AMOUNT OF REDUCTION OF A DOT FILM, AND DEVICE FOR PRACTICING SAME

Yuuji Mitsuhashi, Fujisawa, Japan, assignor to Dai Nippon Insatsu Kabushiki Kaisha, Shinjuku, Japan

Filed Apr. 9, 1979, Ser. No. 28,195
Claims priority, application Japan, Apr. 11, 1978, 53-42270
Int. Cl.³ G01J *3/48;* G01N *21/01, 21/07*
U.S. Cl. 356—51 **13 Claims**



1. A method of measuring the amount of reduction of a dot film, comprising the steps of:

reducing a dot film with reducer;

applying light to reduced portion of the dot film;

extracting two quantities of light in light including a relatively large amount of ultraviolet rays and in light including a relatively large amount of infrared rays from light which passed through said dot film;

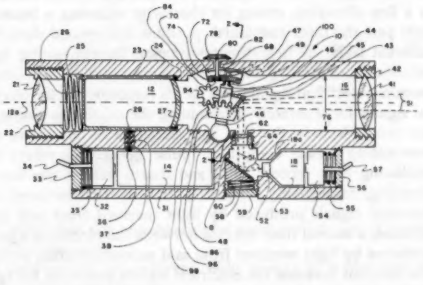
calculating differences between said quantities of light; and

displaying the amount of reduction which calculated from said differences.

4,266,873
COLLINEAR AIMING LIGHT IMAGE VIEWER

John J. Hacskaylo, and Michael Hacskaylo, both of Falls Church, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 20, 1979, Ser. No. 68,270
Int. Cl.³ G02B *23/10*
U.S. Cl. 356—251 **6 Claims**



1. A collinear aiming light image viewer device enclosed in a common housing, said device comprising:

an image intensifier having an optical axis extending entirely through said common housing;

a high voltage power supply section electrically connected to said image intensifier for providing high voltage bias thereto;

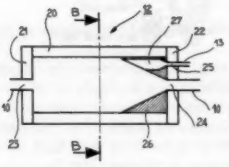
a means for generating a laser aiming light beam out the target scene end of said collinear aiming light image viewer device; and

an optics compartment having optical means therein for aligning said laser aiming light beam symmetrically along a portion of said optical axis that extends entirely through said common housing wherein returned reflections of said laser aiming light beam forming a laser beam image is directly viewed with a target image through said image intensifier.

4,266,874
APPARATUS AND METHOD FOR MEASURING THE SIZE OF FIBERS

Gerard Janin, Essey les Nancy, and Jean-Marie Ory, Heillecourt, both of France, assignors to Institut National de la Recherche Agronomique, Paris, France

Filed Nov. 6, 1978, Ser. No. 957,679
Claims priority, application France, Nov. 7, 1977, 77 33441
Int. Cl.³ G01N *15/02, 21/23, 21/05*
U.S. Cl. 356—335 **9 Claims**



1. An apparatus for measuring the size of fibers, comprising:

a main circuit wherein a main flow of a liquid having a fiber sample diluted therein is caused to circulate;

a derivation circuit having a portion of small diameter with respect to the length of the fibers to be measured providing a laminar flow;

said main circuit including a chamber, said derivation circuit extending from said chamber, said chamber including means for creating therein a vortex flow so as to divert randomly a portion of the fibers circulating in said main circuit into said derivation circuit, in a secondary flow; and

optical means for measuring the size of the fibers as they pass in said portion of small diameter of said derivation circuit;

wherein said main circuit includes:

a conduit having open first and second ends terminating at opposite ends of said chamber,

said chamber having a substantially elongated cylindrically shaped portion having a longitudinal axis, said chamber having longitudinally opposed inlet and outlet walls respectively connected to said first and second conduit ends,

said chamber cylindrically shaped portion having a cross-sectional area greater than the cross-sectional areas of said conduit ends,

said conduit ends being substantially aligned with said axis,

said chamber having an outlet end portion with an inner wall coverging downstream for connection to said second conduit end of said main circuit,

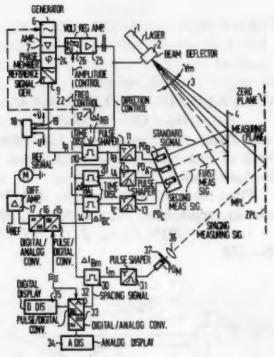
said derivation circuit having an inlet opening into said inner wall of said outlet end portion of said chamber.

4,266,875

METHOD AND DEVICE FOR CONTACT-FREE INTERVAL OR THICKNESS MEASUREMENT BY CONTROL OF THE DIRECTION OF A LIGHT RAY BEAM

Viktor Bodlaj, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Fe.. 5, 1980, Ser. No. 118,778
Claims priority, applica..on Fed. Rep. of Germany, Feb. 20, 1979, 2906494
Int. Cl.[3] G01S 9/62
U.S. Cl. 356—381 6 Claims



1. A method for contact-free interval or thickness measurement, comprising the steps of:

providing a sharply concentrated light ray beam generated by a light source and periodically deflecting it over a measured space by means of a beam deflector;

a measuring plane being positioned in the measuring space and spaced from a reference plane by the interval or thickness to be measured;

providing first, third and fourth light beam detectors positioned to receive reflections of the light beam from a beam divider and a second light beam detector positioned to receive reflections from the measuring and reference planes;

measuring the interval or thickness by use of a time difference between a standard signal from the first detector and at least one spacing measuring signal from the second detector;

controlling deflection frequency of the light beam by use of a time difference between a reference signal derived from a generator controlling deflection frequency and said standard signal;

controlling deflection amplitude of the light beam by use of a time difference between said standard signal and a first measuring signal derived from the third light detector; and

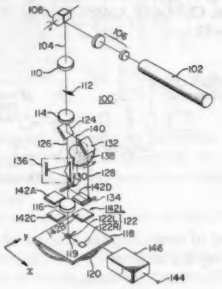
controlling a direction of the light ray beam by use of a time difference between one of said standard and first measuring signals and a second measuring signal derived from the fourth light detector, the direction of the light ray beam being corrected when this time difference deviates from a given reference value.

4,266,876

AUTOMATIC ALIGNMENT APPARATUS

Kiwao Nakazawa, Tokyo, and Akikazu Tanimoto, Kawasaki, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Mar. 29, 1978, Ser. No. 891,301
Claims priority, application Japan, Mar. 31, 1977, 52-35415
Int. Cl.[3] G01B 11/00, 11/14; G02B 27/17
U.S. Cl. 356—400 16 Claims

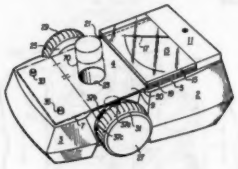


1. An apparatus for determining the positional relationship between two objects, comprising a reference mark on each object, each reference mark having first and second parallel portions and having third and fourth parallel portions, the first, second, third and fourth portions being arranged such that the first and second portions on one object are spaced a predetermined distance from corresponding first and second portions on the other object and the third and fourth portions of one object are spaced a predetermined distance from corresponding third and fourth portions on the other object when the two objects are in a predetermined positional relationship, means for scanning a beam of light past the first and second portions in a first direction, means for thereafter scanning a beam of light past the third and fourth portions in a second direction different from the first direction, means for converting light received from each of the portions during each scan to corresponding electrical signals, and means responsive to the electrical signals for separately determining the relative positions of the two objects in the first and second scan directions, the determining means comprising pulse generating means for producing first, second, third and fourth pulse trains corresponding, respectively, to a first time interval between the electrical signals produced by light received from said first portions, a second time interval between the electrical signals produced by light received from said second portions, a third time interval between the electrical signals produced by light received from said third portions and a fourth time interval between the electrical signals produced by light received from said fourth portions, reversible counter means for counting the first pulse train in one direction and for counting the second pulse train in the opposite direction to determine the difference between the first and second time intervals and for counting the third pulse train in one direction and for counting the fourth pulse train in the opposite direction to determine the difference between the third and fourth time intervals.

4,266,877
PHOTOMETER WITH INTERCHANGEABLE CALIBRATION CARDS

Detlef Bodart, Darmstadt, Fed. Rep. of Germany, assignor to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Aug. 27, 1979, Ser. No. 70,077
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1978, 2837443
Int. Cl.³ G01J 3/50; G01N 21/31
U.S. Cl. 356—414 10 Claims

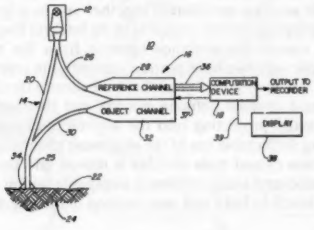


1. A photometer adapted for use with interchangeable calibration cards, comprising a galvanometer having a transparent cover over its indicator needle, said cover being provided with a slot along its edge which faces the center of said photometer, said slot being adapted to permit insertion of one end of one of said calibration cards into said covering, beneath said needle; a zone adjacent said galvanometer and said slot containing an orifice adapted to receive a photometer cell, a first control knob located on a side of said photometer for setting the photometer to its blank value; and a second control knob, for adjusting the wavelength of the photometer, having coded means thereon for corrolating various wavelengths of said photometer, produced by rotating said second control knob to various settings, to data contained on said calibration cards.

4,266,878
APPARATUS FOR MEASUREMENT OF SOIL MOISTURE CONTENT

Siegfried O. Auer, Bowie, Md., assignor to Norlin Industries, Inc., Deerfield, Ill.

Filed Dec. 26, 1978, Ser. No. 972,773
Int. Cl.³ G01J 3/38; G01N 21/35
U.S. Cl. 356—419 12 Claims



1. Apparatus for monitoring the moisture content of a soil sample comprising:

a light source for radiating light energy at a plurality of selected wavelengths;

light transmission means establishing first and second transmission paths each having first and second ends, the first end of said first path being disposed for receiving light radiated from said light source;

a soil probe insertable in a bore formed in the soil sample, said soil probe including a window for directing light from the second end of said first light transmission path to said soil sample at selected depths within said bore and for directing light reflected from the soil sample to the first end of said second light transmission path;

displacement measuring means secured to said soil probe for providing an indication of the relative position of said window within said bore;

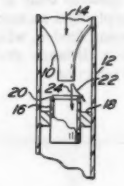
means coupled to the second end of said second light transmission path for determining the reflectance factors of said reflected light at said selected wavelengths; and

means responsive to said reflectance factors and to said position indications for computing the moisture content of the soil sample as a function of the position of said window within said bore.

4,266,879
FLUID RESONATOR

Richard T. McFall, 2230 Pine St., Philadelphia, Pa. 19103

Filed Jan. 16, 1975, Ser. No. 541,549
Int. Cl.³ B01F 11/00
U.S. Cl. 366—108 16 Claims



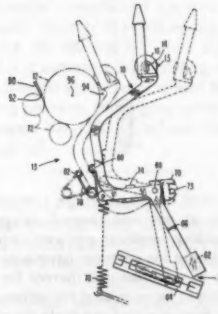
1. Apparatus for producing vibrations in a fluid flow, comprising:

at least one cylindrical member adapted to be mounted in a fluid flow with its longitudinal axis parallel to the direction of fluid flow, and wherein the leading edge of said cylindrical member varies about its circumference in the direction of the fluid flow path, wherein the variation of the leading edge of said cylindrical member provides a sinusoidal shape.

4,266,880
PAPER INSERTION APPARATUS

James C. Buchanan, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 26, 1978, Ser. No. 945,921
Int. Cl.³ B41J 19/76
U.S. Cl. 400—550 6 Claims



1. Improved semi-automatic paper insertion apparatus for use in a typewriter of the kind having a keyboard including number keys for producing coded signals in response to operator key actuations, a platen that serves in defining a paper feed

path extending past a printing line, an operator manipulable paper hold-down device that has a first position at said paper feed path and a second position withdrawn from said paper feed path, a detector for producing a detection signal indicating the presence of said paper hold-down device in said second position and an indexing device that advances paper along said paper feed path in accordance with an indexing control signal, said paper insertion apparatus comprising:

a storage having stored therein at least one predetermined distance code representing a paper insertion distance,

first control means, activated by said detection signal, for disabling normal processing of keyboard code signals and for accessing in accordance with any one of a preselected set of keyboard code signals a corresponding distance code from said storage;

means, cooperating with said first control means, for storing said accessed distance code at an indexing storage location; and

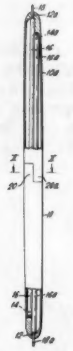
insertion control means, responsive to a transition•in the state of said detection signal indicating movement of said paper hold-down [bail] *device* from said second position, for accessing said distance code at said indexing storage location and for supplying a corresponding set of control signals to said indexing device, whereby a sheet of paper may be advanced a distance that corresponds to an operator keyboard selection.

4,266,881

PEN WITH RETRACTABLE POINT

Harry E. Rubens, Bay Harbor Islands, Fla., assignor to Institute of Applied Biology Charitable Research Trust, Bay Harbon Islands, Fla.

Filed Oct. 18, 1978, Ser. No. 943,009
Int. Cl.³ B43K *24/02, 27/12*
U.S. Cl. 401—32 **5 Claims**



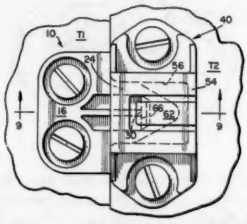
1. A pen for use with an ink cartridge, comprising two pen bodies each having at one end thereof, integrally formed, longitudinally extending, resilient portions, interlockable to each other, for enclosing the cartrige, having an opening in at least one said body at a second end thereof for allowing the point of the cartridge to be projected therethrough in writing position; a seat in at least one said pen body for positioning the cartridge thereon; said pen bodies resiliently interlocked to each other, in not less than two positions, one for moving the cartridge into protract position when the two bodies are moved towards each other manually, and the other position for manually retracting the cartridge when the cartridge when the two bodies are pulled away from each other; the longitudinally extending portions of one body being identical to the longitudinally extending portions of the other body.

4,266,882

TABLE SECTION ALIGNING AND FASTENING DEVICE

Julius B. Wilhelmi, 38 Merrill Rd., Hull, Mass. 02045, and Bert O. Anderson, 18 Maugus Ave., Wellesley, Mass. 02181

Filed Oct. 19, 1978, Ser. No. 952,744
Int. Cl.² F16B *12/00*
U.S. Cl. 403—14 **10 Claims**



1. An aligning and fastening device for interconnecting first and second joinable table sections at respective abutting edges thereof, said device comprising:

A. a male member including

i. a base portion adapted for mounting to the underside of the first table section at its abutting edge,

ii. a nose portion projecting outwardly from one end of said base portion and having a portion including a free end adapted for extending beyond the abutting edge of the first table section when said male member is mounted,

iii. said nose portion having a retaining notch disposed at an intermediate position in said nose portion, said notch being defined by first and second angled surfaces formed in the side of said nose portion between the free end thereof and the base portion; and

B. a female member including

i. a base portion adapted for mounting to the underside of the second table section at its abutting edge,

ii. a channel defining portion defining an alignment channel and an entrance opening adapted to receive said nose portion of said male member when said first and second table sections are abutted together and in alignment, and

iii. a gripping portion comprising an integral finger projecting toward the entrance opening from the end of said female member base portion opposite the entrance opening and having a free end that is resiliently flexible relative to said channel defining portion and that includes a lip normally projecting into the alignment channel, said lip being deflectable out of the alignment channel as said nose portion of said male member is moved into the alignment channel and being resiliently engagable within said retaining notch to hold said nose portion in the alignment channel.

4,266,883

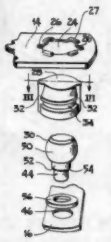
WINDSHIELD WIPER LINKAGE

William C. Riester, Williamsville, and Dionysios D. Papadatos, Kenmore, both of N.Y., assignors to Trico Products Corporation, Buffalo, N.Y.

Filed Apr. 16, 1979, Ser. No. 30,113
Int. Cl.³ F16C *11/00, 11/06*
U.S. Cl. 403—134 **4 Claims**

1. In a transmission linkage assembly for windshield wiper

systems including a first linkage member having an aperture including one or more radially extending key slots therethrough, a one piece socket member comprising an internal hollow spherical portion, terminating in an open ended cylindrical portion the socket member being engaged in said aperture, said socket member having one or more external ears positioned to engage said key slots for retaining said socket member against rotation and a second linkage member having a substantially spherical ball terminating in a cylindrical stem affixed thereto and received in said socket member through the



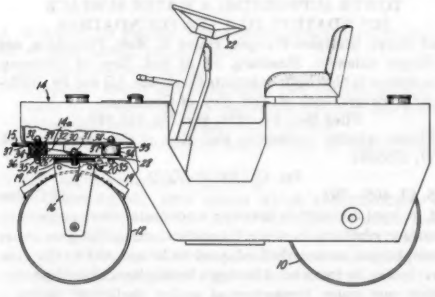
cylindrical end opening characterized in that said socket member is of semi-rigid plastic material having a stress level yieldable without fracturing to the pressure applied during insertion of the ball stem but which will resist yielding to the pressure applied during operation, said socket member includes internal axially extending lubrication distribution and relief slots extending through the edge of the open end and in alignment with said ears and a seal of closed cell, cellular, resilient material is disposed in compression between the periphery of the cylindrical open end of said socket and the surface of said second linkage member circumscribing said cylindrical stem.

4,266,884

RESILIENTLY MOUNTED STEERING YOKE FOR ROAD ROLLER

Eskil Tuneblom, Mount Arlington, N.J., assignor to Dynapac Maskin AB, Solna, Sweden

Filed May 7, 1979, Ser. No. 36,284
Int. Cl.³ E01C *19/26*
U.S. Cl. 404—122 **10 Claims**



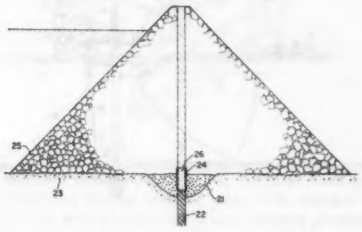
1. In a road roller having a frame, a pair of longitudinally spaced drums, at least one of which is a guide drum, means for supporting the frame on the drums including means for pivotally supporting the frame on the guide drum, and steering means for pivoting the guide drum for steering the road roller, the improvement wherein the guide drum supporting means comprises a vertical pivot means coupled to the guide drum, vertical anti-friction bearing means on the pivot means for permitting the guide drum to pivot horizontally relative to the frame, and flexible support means coupled between the bearing means and the frame and including two longitudinally spaced resilient supports for permitting the tilting of the guide drum relative to the frame around the longitudinal axis and absorbing impact shocks generated by the guide roller when encountering obstacles.

4,266,885

METHOD OF CONSTRUCTING A CONTINUOUS CUT-OFF WALL AND A CORE OF A FILL-TYPE DAM

Kazuaki Naito, Sayama; Takaiki Tetekawa, Kawaguchi; Shigeyuki Sogo, Sayama; Kazuhiko Higaki, Tokyo; Tetu Yasuoka, and Hidetoshi Hosoi, both of Kokubunji, all of Japan, assignors to Ohbayashi-Gumi Ltd., Osaka and Nichireki Chemical Industry Co., Ltd., Tokyo, both of, Japan

Continuation-in-part of Ser. No. 815,457, Jul. 13, 1977, abandoned. This application Oct. 12, 1978, Ser. No. 950,542
Int. Cl.³ E02B *7/04*; E02D *27/00*
U.S. Cl. 405—109 **5 Claims**



1. In a method of constructing a continuous cut-off wall comprising the steps of:

excavating a first wall-shaped pit in the earth;

introducing bentonite slurry into the pit being excavated;

inserting a tremie pipe into said pit;

inserting through said tremie pipe into said wall-shaped pit an impermeable material by replacing said mud water to form a first cut-off wall segment; and

following said first cut-off wall segment thus constructed, constructing a second cut-off wall segment in the same manner as said first cut-off wall segment, said second cut-off wall segment being positioned adjacent to an end of said first cut-off wall segment so as to connect and form a continuous extension of said first cut-off wall segment; and

constructing each subsequent cut-off wall segment in like manner one after another so as to form a continuous cut-off wall in the earth, the improvement wherein said impermeable material comprises at ambient temperature a cement bitumen concrete of a cold-setting property comprising cement 80–250 kg/m^3, fine aggregate 600–1000 kg/m^3, coarse aggregate 800–1200 kg/m^3 and bituminous emulsion 200–400 kg/m^3, or a cement bitumen mortar of a cold-setting property comprising cement 200–800 kg/m^3, fine aggregate 300–1500 kg/m^3 and bituminous emulsion 300–900 kg/m^3.

4,266,886

METHOD AND DEVICE FOR CONNECTING A FLOATING INSTALLATION TO AN UNDERWATER INSTALLATION THROUGH AT LEAST ONE FLEXIBLE LINE

Alan Milton, Boulogne sur Seine, France, assignor to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Sep. 8, 1978, Ser. No. 941,097
Claims priority, application France, Sep. 8, 1977, 77 27169
Int. Cl.³ F16L *1/04*
U.S. Cl. 405—169 **18 Claims**

1. A method for connecting a floating surface installation to

an underwater installation through at least one flexible pipe, comprising the steps of:

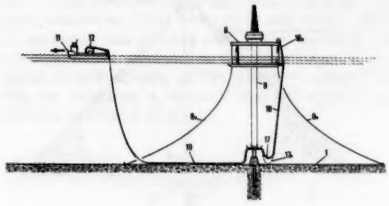
(a) placing onto the water bottom a rigid guide structure of a height smaller than the water depth and comprising at its upper part template support means for supporting said at least one flexible pipe while limiting the curvature thereof;

(b) positioning said floating surface installation above said guide structure;

(c) positioning a barge in the vicinity of said floating surface installation, said barge carrying at least one flow line connected at one end thereof to said at least one flexible pipe by means of a connecting element at one end of said at least one flexible pipe;

(d) passing a handling line, connected to a mouthpiece element at the other end of said at least one flexible pipe, from said barge to said floating surface installation;

(e) lowering said handling line by means of a complementary



element, adapted to engage said template support means of said rigid guide structure, from said floating surface installation to said rigid guide structure and thereafter engaging said complementary element with said template support means in a spaced relationship, thereby providing adequate guiding space between said template support means and said complementary element for the passage of said handling line and said at least one flexible pipe;

(f) exerting from said floating surface installation a pull on said handling line so that said at least one flexible pipe passes through said guiding space of said template support means, forming, by gravity, a loop portion of limited height between said support means and a substantially vertical portion of said at least one flexible pipe suspended from said floating surface installation; and

(g) connecting said at least one flexible pipe to said surface installation and connecting said at least one flow line to said underwater installation.

4,266,887

SELF-ELEVATING FIXED PLATFORM

Paul R. Corder, Baytown, Tex., assignor to Brown & Root, Inc., Houston, Tex.

Filed Jun. 10, 1977, Ser. No. 805,326

Int. Cl.³ E02B *17/02, 17/08*

U.S. Cl. 405—196 **46 Claims**

1. A mobile, offshore platform assembly comprising

a base member having a fluid-tight compartment,

means for adapting the fluid-tight compartment to store petroleum products,

said base member having sufficient buoyancy when said fluid-tight compartment is filled with a gas to be the prime buoyancy element of said platform assembly,

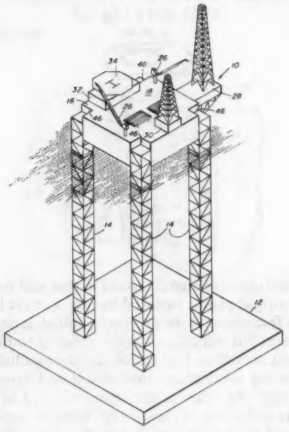
a deck member,

a plurality of open, truss-like, elongated support leg structures, said leg structures being permanently secured to the base member and having a substantially vertical orientation, and said legs being connected to the base member to provide a force resistant to vertical flexing of the base member,

each of the truss-like leg structures intersecting a plane defined by an upper-work surface of the deck member at positions not intersecting the work surface defined by the deck member,

said truss-like leg structures being positioned at the vertices of a polygon,

a plurality of jack elements secured around an outside periphery of the deck member and oriented to engage, substantially at the periphery, respective cooperating elements on said leg structures to vary the spacing between the deck and the base,



a plurality of lateral support means attached to said peripherally located support legs and spaced outward away from the deck to permit the deck to move in a non-interfering relationship with respect to the base member, and to provide a force resistant to lateral movement of the leg structures,

whereby said base can be lowered to engage a submerged water bottom and said deck can be raised above the water surface.

4,266,888

SPHERICAL JOINT FOR CONNECTING A CONCRETE TOWER SUPPORTING A WATER SURFACE FOUNDATION TO A SEA FOUNDATION

Karl Bayer, Stuttgart-Wangen; Heinz G. Butt, Pinneberg, and Jürgen Salewski, Hamburg, all of Fed. Rep. of Germany, assignors to Gutehoffnungshütte Sterkrade AG and Fa. Bilfinger & Berger, both of, Fed. Rep. of Germany

Filed Dec. 14, 1978, Ser. No. 969,689

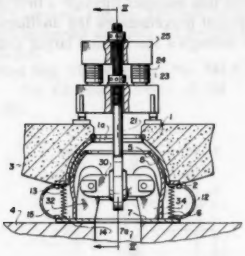
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1977, 2755592

Int. Cl.³ E02B *17/00*

U.S. Cl. 405—202 **23 Claims**

1. A joint connection between a concrete tower supporting a surface platform in a sea foundation, comprising an outer hemispherical socket shell adapted to be secured to the concrete tower, an inner head having a hemispherical shell portion within said outer hemispherical socket shell and having a lower portion extending downwardly from said shell portion, lubricated slide shoe means disposed between said hemispherical shell portion of said inner head and said outer hemispherical socket shell, a horizontal base plate secured to said lower portion of said inner head and having an opening therethrough defining a line conveying passage, a support gimbal secured to said inner head, a pull rod connected to said support gimbal and extending upwardly therefrom, and prestressing means connected to said pull rod to prestress it in a direction to urge said hemispherical shell portion of said inner head into pivotal interengagement with said outer hemispherical socket shell,

and cover means connected between said base plate and said outer hemispherical socket shell to protect the pivotally interengaged hemispherical shell portion of said inner head and said outer hemispherical socket shell.

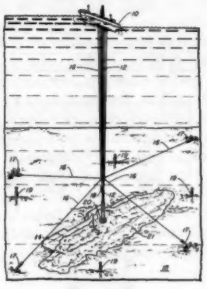


4,266,889

SYSTEM FOR PLACING FRESHLY MIXED CONCRETE ON THE SEAFLOOR

Robert D. Rail, Ojai, and Harvey H. Haynes, Camarillo, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 23, 1979, Ser. No. 96,852
Int. Cl.³ E02D 15/06
U.S. Cl. 405—223 **14 Claims**



1. A system for placing freshly mixed concrete on the seafloor at great depths, comprising:

a. a surface platform means;

b. a pipeline means extending from said surface platform means to the seafloor for transferring concrete mix from said surface platform means to the seafloor;

c. A discharge means at the seafloor end of said pipeline means;

d. said discharge means comprising:

a telescoping slip joint means which accommodates a portion of the seafloor end of said pipeline means and operates as a heave control for allowing vertical movement of the pipeline means therein while decoupling the discharge means from any vertical motion of said pipeline means;

an expansion chamber where velocity of concrete mix flowing through the pipeline means is reduced;

a discharge end, from which flowing concrete mix from said pipeline means is discharged;

a deflector means for directing downward flowing concrete mix to a horizontal flow, and which negates the vertical lift component of discharging concrete mix;

a means positioned about said discharge means for maintaining said discharge end at a desired fixed depth of burial in a mound of discharged concrete;

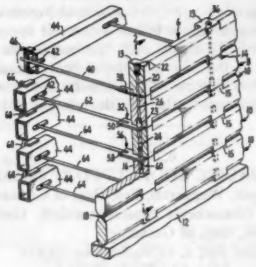
e. said discharge means operable for controlling the placement of concrete mix on the seafloor, and on objects and structures in the vicinity of the seafloor.

4,266,890

RETAINING WALL AND CONNECTOR THEREFOR

William K. Hilfiker, Eureka, Calif., assignor to The Reinforced Earth Company, Washington, D.C.

Filed Dec. 4, 1978, Ser. No. 966,119
Int. Cl.³ E02D 17/00
U.S. Cl. 405—286 **3 Claims**



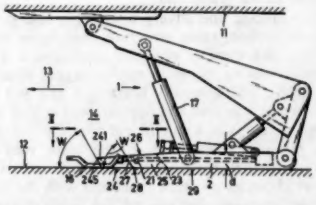
1. A retaining structure comprising: elongate stacked preformed stretchers having stacking pads with opposed slots formed therein, said slots extending in a direction perpendicular to the elongate dimension of the stretchers; connector plates interposed between the stretchers in apposition to the stacking pads thereof, each said plate resting on and being supported by the stretcher therebelow and having fixedly secured thereto and extending thereabove and therebelow retaining pins engaged in the opposed slots of the stacking pads to maintain the stretchers in aligned stacked relationship; at least certain of said plates, having an anchor rod secured thereto and extending therefrom to an embedded anchor beam having a slot extending therethrough; and anchor plates secured to the distal ends of said rods in a disposition perpendicular to the connector plates secured thereto for extension through the slots when aligned therewith, and abutting engagement with the beams when turned to a position where the connector plates are interposed between apposed stacking pads.

4,266,891

SUPPORT ASSEMBLIES FOR MINE WORKINGS

Lubomir Plevak, Lünen, and Jürgen Dodt, Menden, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lünen, Fed. Rep. of Germany

Filed Dec. 29, 1978, Ser. No. 974,538
Claims priority, application Fed. Rep. of Germany, Jan. 5, 1978, 2800376
Int. Cl.³ E21D 15/44
U.S. Cl. 405—291 **14 Claims**



1. In or for a support assembly as used in a mineral mining installation; an improved floor skid structure which comprises:

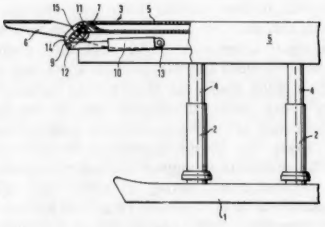
at least one skid provided with upper and lower surfaces, side surfaces and front and rear ends relative to the mineral face of the mine working in which the assembly is used, the lower surface of the skid being engageable with the floor of said working, a plurality of recesses in the front end of the skid, said recesses being spaced-apart laterally of the skid, a separate extension component provided with upper and lower surfaces, side surfaces and projections at one end, separate additional components each provided with upper and lower surfaces, wherein the extension component is locatable at the front end of the skid with its projections received in said recesses and its upper, lower and side surfaces forming continuations of the respective upper, lower and side surfaces of the skid and the additional components are receivable in the recesses when the extension component is not in use with their upper and lower surfaces substantially flush with the respective upper and lower surfaces of the skid to fill the recesses, and wherein means is provided to secure the extension component and the additional components to the skid detachably and optionally.

4,266,892

HYDRAULIC ROOF-SUPPORT FRAME

Alfred Maykemper, Wuppertal, Fed. Rep. of Germany, assignor to Hermann Hemscheidt Maschinenfabrik GmbH & Co., Wuppertal, Fed. Rep. of Germany

Filed Jul. 2, 1979, Ser. No. 53,833
Int. Cl.³ E21D *17/02*
U.S. Cl. 405—293 **6 Claims**



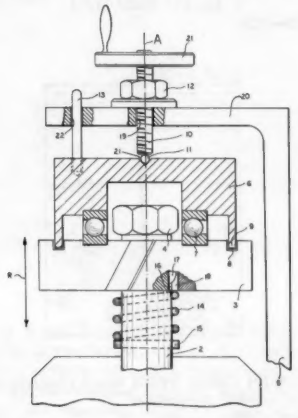
1. An hydraulic roof-support frame comprising:
(a) a base assembly;
(b) a roof-engaging assembly;
(c) extensible and retractable hydraulic props extending between the roof-engaging assembly and the base assembly for raising and lowering the roof-engaging assembly, said roof-engaging assembly comprising a main roof-engaging structure connected to upper ends of the props and an auxiliary roof-engaging structure mounted on the main roof-engaging structure for pivotal movement about a generally horizontal axis between a stowed position in which it lies folded back beneath the main roof-engaging structure and an operative position in which it extends outwardly from the main roof-engaging structure in a position to assist in supporting a roof;
(d) a double acting extensible and retractable hydraulic jack operable unidirectionally to effect pivotal movement of the auxiliary roof-engaging structure from one of its said positions to the other; and
(e) a drive linkage operatively connecting said jack to said auxiliary roof-engaging structure, said drive linkage including a link member pivotally connected at a first end region thereof to the main roof-engaging structure at a point above said generally horizontal axis and pivotally connected at a second and opposite end region thereof to one end of said jack, a second and opposite end of the jack being pivotally connected to the main roof-engaging structure so that movement of the jack pivots the link member about its pivotal connection with the main roof-engaging structure, said pivotal link being drivingly connected with the auxiliary roof-engaging structure by a pin-and-slot mechanism comprising a pin slidable along a slot, one of said pin and said slot being provided on the link member and the other of said pin and said slot being provided on said auxiliary roof-engaging structure, movement of the link member through a first given angle producing pivotal movement of the auxiliary roof-engaging structure through a second and larger angle.

4,266,893

POSITIONER FOR ROTARY TOOL

Johannes Tröger, Radebeul; Gernot Läuter, and Heinrich Spörl, both of Dresden, all of Fed. Rep. of Germany, assignors to Forschungsinstitut für Holztechnologie, Dresden, German Democratic Rep.

Filed Oct. 16, 1978, Ser. No. 951,875
Int. Cl.³ B23C *5/26*
U.S. Cl. 409—206 **6 Claims**

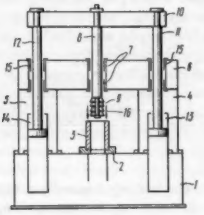


1. In an apparatus having a tool carried on an end of a tool shaft having and rotatable about a shaft axis relative to a support, the improvement comprising:
mounting means including at least one axially extending formation between said shaft and said tool for rotationally coupling said shaft and said tool and for axial displacement of said tool along said shaft;
a compression spring surrounding said shaft and braced axially between said tool and said shaft for rotating with said shaft and tool and for urging said tool axially in one direction along said shaft; and
positioning means between said support and said tool having a threaded spindle extending on said axis toward said shaft and threadedly engaging said support, a force-transmitting element lying on said axis and having one side bearing axially in said one direction on said spindle and another side, and an axial-thrust bearing having one axial end bearing axially in said one direction on said force-transmitting element and another axial end bearing axially in the opposite direction on said tool against the force of said spring.

4,266,894
VERTICAL BROACHING MACHINE FOR INTERNAL BROACHING

Georgy I. Zuzanov, ulitsa Vavilova, 93, kv. 39; Jury P. Ignatov, 4 mikroraion Yaseneva, 170, kv. 278, and Sergei P. Chinenov, 4 Verkhne-Mikhailovsky pereulok, 10, korpus 5, kv. 260, all of Moscow, U.S.S.R.

Filed Sep. 11, 1978, Ser. No. 941,071
Int. Cl.[3] B23D *37/10, 41/04*
U.S. Cl. 409—283 1 Claim

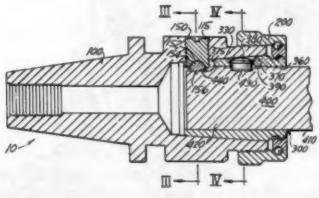


1. A vertical broaching machine for internal broaching, comprising: a base for mounting a blank being machined; a cross-piece supported for movement towards and away from said base; a mandrel having one end fixed to said cross-piece and one end supporting a broach; a spring collet positioned at the bottom of the broach and coaxial therewith, said collet centering a blank with respect to said broach during movement of the cross-piece towards the base; a guide supported by said base and located between said fixed end of said mandrel and said end supporting said broach; said guide having a passage for said mandrel in the course of said internal broaching of said blank; a hydraulic drive connected with said mandrel for imparting movement thereto, said base having uprights extending vertically upward therefrom and said guide being made as a traverse resting against said uprights and having said passage for said mandrel and two additional passages spaced at equal distances from said mandrel passage, said hydraulic drive including hydraulic cylinders having rods guided in said two additional passages of said traverse, each one of said hydraulic cylinders being located partly in the base and partly in one of said uprights, while the ends of said rods are interconnected above the traverse by the cross-piece supporting the mandrel.

4,266,895
HIGH TORQUE CHUCK ASSEMBLY AND COLLET

David L. Lewis, Darien, Ill., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jan. 9, 1979, Ser. No. 2,118
Int. Cl.[3] B23C *5/26;* B23B *31/04*
U.S. Cl. 409—232 6 Claims



1. A chuck assembly for retaining a tool comprising:

a chuck body having an outer surface, an internal, rearwardly tapering bore and a radial aperture extending through the body between the outer surface and the bore;

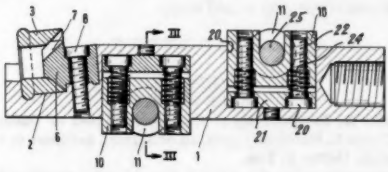
a collet mounted within the tapering bore of the chuck body, said collet including a tool receiving bore and means for locking a tool mounted within the bore against axial pull-out therefrom, said collet also including an aperture extending therethrough into the bore and aligned with the radial aperture of the chuck body; and

means for securing the chuck body to a tool mounted within the tool receiving bore of the collet, said securing means including a flat surface pivotally coupled to said chuck body, said securing means mounted to said chuck body and extending through the aligned radial apertures in said chuck body and collet.

4,266,896
DEBURRING TUBES OR PIPES ON THE INSIDE

Friedrich Meier, Remscheid, and Hugo Philipp, Hilden, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf and Röchlingburbach Weiterverarbeiting GmbH, Völklingen, both of, Fed. Rep. of Germany

Filed May 7, 1979, Ser. No. 29,449
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1978, 2816895
Int. Cl.[3] B23D *1/24*
U.S. Cl. 409—299 7 Claims



1. Tool for deburring the interior of a pipe or tube, comprising:

a tool holder of elongated construction;

resilient guide means in the holder for engagement with the wall of the tube or pipe to position the holder therein;

an annular cutter, having an axis and a circular cutting edge on one end, the edge having a diameter which exceeds the axial length of the cutter, there being an obliquely oriented recess in the tool holder, the cutter further having an annular bead at the other end;

means for clamping the cutter in the recess; and

the cutter being mounted in and clamped to said recess at an upwardly inclined slope of said axis, the recess having a contour to match a cylindrical contour of the cutter and of the bead as placed into said portion of the recess, while a radially, oppositely located portion of the bead will engage a deburred wall portion of the pipe or tube in axial alignment with the operational cutting edge.

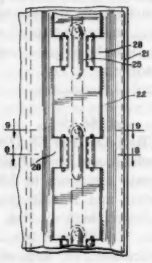
4,266,897
LADING TIE ANCHOR

Finn Jensen, Dolton, Ill., assignor to Illinois Railway Equipment Company, Chicago, Ill.

Filed Mar. 19, 1979, Ser. No. 21,573
Int. Cl.[3] B61D *45/00*
U.S. Cl. 410—113 7 Claims

1. Lading tie anchor means for installation in the side lining and doorpost channels of a box car comprising an elongated scoop member for securement in said side lining or channels and including a longitudinally extending concave section adapted to be recessed within said side lining or channels and having tie bar locator formations in said concave section, and a tie bar welded to and within said concave section, said tie bar being formed from a strip of light gauge material of uniform width so as to have repetitive series of formations therealong with each series including a wide section having a width only slightly less than said uniform width and the opposing edges of which are welded to said concave section of said scoop adjacent the side margins thereof, a narrow width section spaced

from said concave section and the opposing free side edges of which are rounded and rigidified on being formed by folding margins of said light gauge metal over on itself, and rigidifying



formations located partially in said narrow width sections; at least a portion of said rigidifying formations having tie bar locating-engagement with said tie bar locator formations in said concave section of said scoop.

4,266,898

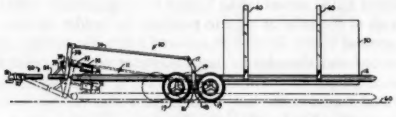
BALE CARRIER

Merlin D. Jacobsen; David O. Jacobsen, both of Dallas, and Claude E. Harrison, Lucas, all of S. Dak., assignors to H & J Sales, Dallas, S. Dak.

Continuation of Ser. No. 725,373, Sep. 22, 1976, abandoned. This application Apr. 23, 1979, Ser. No. 32,631

Int. Cl.[3] **A01D** *87/12;* **B60P** *1/02*

U.S. Cl. 414—24.5 **5 Claims**



1. A bale carrier apparatus for loading and transporting large cylindrical hay bales, comprising:

a frame means having a front end and a rear end for receiving and supporting a cylindrical bale thereon, said cylindrical bale having a diameter substantially of a predetermined distance, said frame means including:

a pair of spaced apart parallel support arms connected together at the said front end of the frame means and extending to free ends at the rear ends thereof, said support arms being spaced apart at a distance substantially less than said predetermined distance, and an upwardly and outwardly extending U-shaped member rigidly attached at each end thereof to said support arms, said member having an inner unobstructed passageway therethrough, said passageway having a lateral and a vertical distance of substantially more than said predetermined distance for allowing unobstructed passage of said cylindrical bale onto said support arms, said upwardly and outwardly extending U-shaped members further being laterally spaced beyond wheel assemblies pivotally affixed to said support arms; and

a lever arm first actuating means connected to said frame and to said wheel assemblies for selectively raising and lowering said frame relative to said wheel assemblies between a lower position wherein the said support arms are substantially in contact with and parallel to the ground, and an upper position wherein the bales are not in contact with the ground.

4,266,899

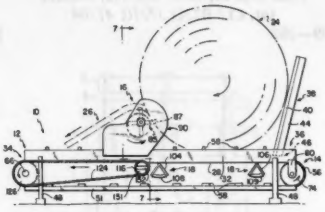
ROUND BALE FEEDER

Wayne B. Skeem, 1742 Targhee Dr., Twin Falls, Id. 83301

Filed Apr. 30, 1979, Ser. No. 34,932

Int. Cl.[3] **A01F** *25/20;* **B65H** *75/42*

U.S. Cl. 414—24.6 **19 Claims**



1. An apparatus for feeding a spirally wrapped round bale of fibrous material, the combination comprising:

a substantially flat support having first and second ends and a retaining wall adjacent said second end;

an endless conveyor, coupled to said support, having top and bottom runs, said top run extending across the top of said support and moving from said second end to said first end;

a restriction roller, rotatably mounted on said support between said first and second ends and above said top run, said roller having gripping means extending therefrom for gripping the fibrous material and pulling it over said roller and towards said first end; and

means on said support for rotating said roller and driving said conveyor,

whereby a round bale of fibrous material is positionable between said roller and said retaining wall with the bottom supported on said conveyor top run and with an outer end of the spirally wrapped material engaged by said gripping means so that the fibrous material is unwrapped and fed off said support at said first end when said means for rotating is driven.

4,266,900

MATERIAL HANDLING APPARATUS

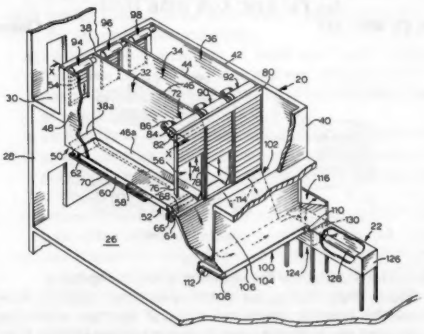
Douglas W. Rynyk, Toronto, Canada, assignor to Canada Square Management Ltd., Toronto, Canada

Filed Mar. 5, 1979, Ser. No. 17,309

Claims priority, application Canada, Jul. 4, 1978, 306714

Int. Cl.[3] **B65G** *65/42, 65/58;* **F23G** *3/00*

U.S. Cl. 414—285 **1 Claim**



1. Material handling apparatus comprising:

a plurality of temporary storage compartments each having a first end at which material can be loaded into the com-

partment and a second end opposite said first end from which material can be discharged, each compartment including: a belt conveyor which forms a bottom wall of the compartment and which extends from said first end to said second end of the compartment, said conveyor being operable periodically to move material loaded into the compartment at said first end longitudinally of the compartment in a direction towards said second end for temporary storage; a first end wall having an opening through which material can be introduced into the compartment generally in the direction in which material is moved through the compartment by said conveyor; side walls extending upwardly adjacent respectively opposite sides of said conveyor for laterally constraining material in said compartment; and closure means at said second end of the compartment providing an obstruction to normally prevent discharge of material from said second end of the compartment and allow material fed towards said second end by said belt conveyor to be accumulated for temporary storage behind said closure means, said closure means being adapted to be opened at appropriate times to allow stored material to be discharged from said compartment by operating said belt conveyor, said closure means comprising a pair of transversely spaced upright guides defining therebetween an opening through which material can be discharged from the compartment, a slat-type roll-up door received in said guides, a mandrel which is rotatable about a longitudinal axis and onto and from which the door can be wound, and means for raising and lowering the door by turning said mandrel;

said compartments all being of substantially the same rectangular shape and size and being disposed side-by-side with said first end walls in alignment, said closure means in alignment, and said conveyor means extending parallel to one another; and,

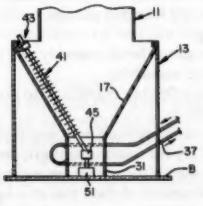
a further belt conveyor extending across said second ends of the compartment in a direction generally normal to said parallel belt conveyors and positioned below said conveyors to receive material discharged from said compartment, said further belt conveyor being operable to deliver said material to a common discharge location laterally of said compartments.

4,266,901

STORAGE BIN HAVING DRIVEN AGITATOR

Henry W. Schuette, Tigard, Oreg., assignor to Wellons, Inc., Sherwood, Oreg.

Filed Nov. 3, 1978, Ser. No. 957,455
Int. Cl.³ B65G *65/48*; F16H *27/02*
U.S. Cl. 414—305 **4 Claims**



4. In a structure of the class described:

an agitator, pl means for driving the agitator in a circular path around a feeding zone,

said means including a circular raceway,

an elongate drive chain in said raceway connected to said agitator,

and reciprocating means engaging said elongate drive chain for advancing the latter around said raceway and thus causing desired movement of said agitator,

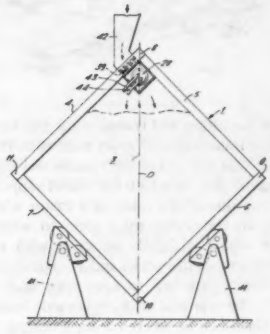
a take up mechanism connecting end portions of said chain, said take up mechanism providing simulated chain elements engageable by said reciprocating means.

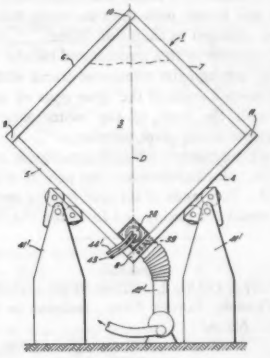
4,266,902

TRANSPORT CONTAINER

Georg L. K. Forsberg, Nylandsgatan 14, 654 65 Karlstad, Sweden

Filed May 14, 1979, Ser. No. 38,905
Claims priority, application Sweden, May 19, 1978, 7805744
Int. Cl.³ B65G *65/46*
U.S. Cl. 414—332 **7 Claims**





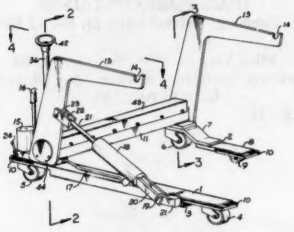
1. A transport container for transportation of bulk products, said container being substantially parallelepipedically formed and having sides, gables and longitudinal corners, tube feeder means for loading and unloading bulk products into and out of said container located in a first longitudinal corner of the container and extending between the container gables, said tube feeder means including a perforated drum and a worm conveyor located within the drum, said container and said tube feeder means cooperating so that when said first longitudinal corner of the container is positioned to be at substantially the vertically highest point of the container the tube feeder means can load said container with bulk product substantially evenly distributed in said container to substantially completely fill same, and when said first longitudinal corner is positioned to be at substantially the vertically lowest point of the container the tube feeder means can substantially evenly and substantially completely unload said container.

4,266,903

LIFTING DOLLIE

Louis M. Surbrook, Seattle, Wash., assignor to Offset Newspaper Equipment Inc., Atlanta, Ga.

Filed Aug. 27, 1979, Ser. No. 70,097
Int. Cl.[3] B66C *23/00*
U.S. Cl. 414—428 **1 Claim**



1. A dollie for lifting and transporting articles comprising:

(a) two side frames spaced apart with each frame having a front and rear end and at least one wheel supporting each end of the frame, in which the wheel supporting the rear end of one side of the frame is a castor wheel, rotatably attached to the frame by a stem to which a co-axial sprocket wheel is fixedly attached with a drive chain extending around the wheel and a corresponding sprocket wheel fixedly attached to a steering shaft rotatably attached to the rear end of the other side frame so that the castor wheel can be steered from a remote location near the other side frame;

(b) a tubular transverse frame interconnecting the rear end of each side frame, with the transverse frame having an open end adjacent to each side frame;

(c) a pivot member with a circular and tubular cross-section extending through the transverse frame with an end extending beyond each of the open ends of the transverse frame, with the stem of the castor wheel extending through slots in the pivot member;

(d) a pair of lifting arms with each arm rigidly attached to an end of the pivot member and the pair of arms extending toward the front ends of the side frames; and

(e) lifting means for raising and lowering the lifting arms.

4,266,904

ADJUSTABLE LOAD LIFTING SPREADER FRAME

Quinten K. Fadness, Boring, Oreg., assignor to RayGo, Inc., Minneapolis, Minn.

Filed May 31, 1979, Ser. No. 44,006
Int. Cl.[3] B62D *43/00*
U.S. Cl. 414—460 **12 Claims**

1. In a spreader frame assembly for handling shipping containers and the like, the combination comprising:

a supporting member;

a horizontal spreader frame having load engaging means on its lower side;

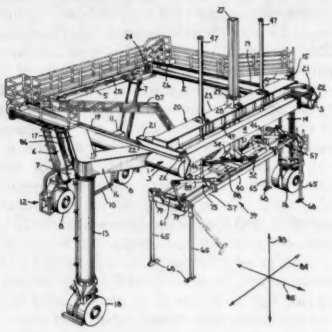
a vertically adjustable reaction member swivelly connected to the upper side of said frame at a position medial of the frame ends which is restrained from rotation;

means movably mounting the reaction member on the supporting member;

a rotate cylinder connected between said frame and said reaction member to rotate said frame about a vertically extending axis;

a tilt cylinder connected between said frame and said reaction member to rotate said frame about a horizontal axis;

lifting means connected to said frame at positions on opposite sides of said positioning column for raising and lowering the frame ends thereby causing vertical adjustment of said reaction member; and



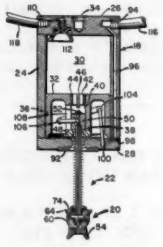
translating operating means connected to said supporting member and reaction member for tilting the reaction member to effect a translation of said frame.

4,266,905

APPARATUS FOR ACQUIRING WORKPIECES FROM A STORAGE BIN OR THE LIKE

John R. Birk, Peace Dale; Robert B. Kelley, Kingston, and Richard P. Tella, Ashaway, all of R.I., assignors to Board of Regents for Education of the State of Rhode Island, Providence, R.I.

Filed Apr. 20, 1979, Ser. No. 32,239
Int. Cl.[3] B65G *47/00*
U.S. Cl. 414—627 **12 Claims**



1. Apparatus for acquiring individual workpieces from a supply of randomly oriented workpieces in a storage bin or the like comprising

a movable mounted head assembly and an abutment surface on said head assembly;

gripping means flexibly connected to said head assembly by support means;

operating means associated with said support means and said head assembly for moving said gripping means relative to said head assembly between an extended position spaced from the abutment surface and at which the flexibility of said support means permits said gripping means to movably adjust to a randomly oriented workpiece contacted thereby, and a retracted position in contact with said abutment surface at which both the gripping means and the workpiece gripped thereby are fixed relative to the head assembly,

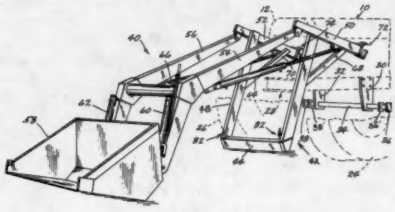
said gripping means operating to grip a workpiece contacted thereby during movement of said head assembly; and,

sensing means responsive to a contact force exerted by said flexibly connected gripping means on a workpiece for generating a control signal.

4,266,906
MATERIALS HANDLING DEVICE AND THE METHOD OF MOUNTING THE SAME ON A TRACTOR

Joseph W. Langenfeld, and Neal W. Westendorf, both of Onawa, Iowa, assignors to Westendorf Manufacturing Co., Onawa, Iowa

Filed Jun. 28, 1979, Ser. No. 52,904
Int. Cl.[3] E02F 3/70
U.S. Cl. 414—686 4 Claims



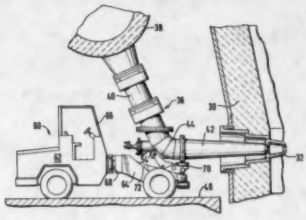
1. In combination,
a tractor having rearward and forward ends and opposite sides,
first and second support members extending laterally from opposite sides of said tractor rearwardly of the forward end thereof,
connection means at the forward end of said tractor,
and a materials handling apparatus mounted on said first and second support members and said connection means,
said apparatus comprising a substantially U-shaped sub-frame means having spaced-apart and rearwardly extending side frame members with rearward and forward ends,
a tower member operatively secured to the rearward end of each of said side frame members, a boom member pivotally secured at its rearward end to each of said tower members and extending forwardly therefrom, a materials handling implement at the forward end of said boom members,
a hydraulic cylinder means for pivotally moving said boom members relative to said towers,
each of said towers having a rearwardly presented U-shaped channel provided at the lower end thereof adapted to receive said laterally extending support members therein,
each of said towers having a downwardly extending finger portion at the upper rearward end of said channel which is adapted to pivotally engage one of said first and second laterally extending support members to limit the relative longitudinal movement of the sub-frame means with respect to said tractor and to position said channels relative to said laterally extending support members during power mounting of said apparatus on said tractor.

4,266,907
DEVICE FOR HANDLING THE VARIOUS COMPONENTS OF AN INSTALLATION FOR THE INJECTION OF PRE-HEATED AIR INTO A SHAFT FURNACE

Pierre Mailliet, Howald, Luxembourg, assignor to Paul Wurth, S.A., Luxembourg

Filed Jul. 24, 1978, Ser. No. 927,583
Claims priority, application Luxembourg, Jul. 29, 1977, 77878; Jun. 22, 1978, 77865
Int. Cl.[3] F27B 1/10
U.S. Cl. 414—687 23 Claims

1. Apparatus for supporting and positioning components of a system for the injection of gas into a shaft furnace comprising:
elongated lifting arm means;
component handling means for releasable supporting and positioning a component of a gas injection system, said component handling means being mounted on said arm means adjacent a first end thereof and being pivotal with respect to said arm means about a first vertical axis;
lifting arm support means, said arm means being movable with respect to said support means to provide for raising and lowering of said component handling means, said support means further being pivotal about a second vertical axis; and

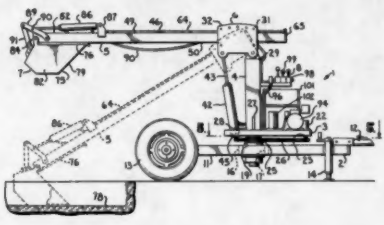


control means for releasably engaging said support means, said control means coupling said support means to said control means adjacent the second end of said arm means, said control means including detachable hinge means which defines said second vertical pivot axis.

4,266,908
EXCAVATING APPARATUS

Donald G. Leiker, 1512 N. 13th St., Garden City, Kans. 67846

Filed Jun. 21, 1979, Ser. No. 50,636
Int. Cl.[3] E02F 3/46
U.S. Cl. 414—690 4 Claims



1. An excavating apparatus comprising:
(a) a mobile chassis for towing by a vehicle and having frame members with wheels rotatably mounted thereto for transport;
(b) a platform positioned in overlying, supported relation to said chassis and having an axial member extending between and connected to said platform and said chassis frame members providing relative horizontal rotation of said platform;
(c) drive means effecting rotation of said platform relative to said chassis including a hydraulic motor driving a first sprocket connected to a second sprocket nonrotatably mounted to said chassis via an endless drive chain member;
(d) an upwardly extending standard mounted to said platform and having a free end spaced from said platform;
(e) a guide means pivotally mounted to said standard free end for up and down swinging movement and having spaced side walls with roller members extending therebetween;
(f) an elongate, rigid boom structure mounted for forward and rearward longitudinal reciprocal movement to said guide means and having respective forward and rearward ends and top and bottom walls, said boom structure extending through said guide means between said side walls

and supported therein by said roller members, said boom structure having a drive chain member connected thereto and generally extending between said forward and rearward ends along said top wall, said guide means having a hydraulic motor mounted to one of said side walls and driving a sprocket in engagement with said drive chain member and operable to longitudinally move said boom structure forwardly and rearwardly through said guide means;

(g) a hydraulic ram extending between and connected to said guide means and said platform for swinging said boom structure upwardly and downwardly;

(h) a bucket member swingably mounted to the forward end of said boom structure and a bucket cover member mounted to the bottom wall of said boom structure adjacent said forward end, said bucket member having a generally planar bottom portion and an open top for scooping material therein whereby said bucket member is rotatable forwardly to excavate and scoop material thereinto and rotatable rearwardly against said cover member to close said bucket member;

(i) a hydraulic ram and a pivotal linkage structure extending between and mounted to said boom structure and said bucket member and operable to swing said bucket member forwardly and rearwardly; and

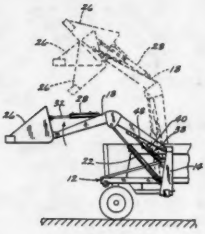
(j) control means and an operator's area upon said platform and rotatable therewith, said control means including valve members for operating said platform, boom structure, and bucket member.

4,266,909

MEANS FOR HYDRAULIC SELF-LEVELING OF A LOADER BUCKET

Joseph W. Langenfeld, Onawa, and Neal W. Westendorf, Smithland, both of Iowa, assignors to Westendorf Manufacturing Co., Onawa, Iowa

Filed Jan. 29, 1979, Ser. No. 7,476
Int. Cl.[3] B66F 9/22
U.S. Cl. 414—700 **3 Claims**



1. In combination,

a tractor,

a front-end loader apparatus mounted on said tractor including a pivotal boom means movable between raised and lowered positions and having a materials handling member pivotally mounted at the forward end thereof, said materials handling member adapted to support material therein and being movable from a level positon to either a dump position or a tipped-back position, said loader apparatus including a first hydraulic cylinder means for pivotally moving said boom means with respect to said tractor to raise and lower said materials handling member, said loader apparatus also including a second hydraulic cylinder means for pivotally moving said materials handling member between its dump and tipped-back positions,

and a third hydraulic cylinder means operatively connected to said boom means so that pivotal movement of said boom means causes the cylinder rod thereof to be retracted or extended depending upon the movement of said boom means,

said third hydraulic cylinder means fluidly connected to said second hydraulic cylinder means so that retraction or extension of said third hydraulic cylinder means, as said boom means pivotally moves, causes predetermined retraction or extension of said second hydraulic cylinder to maintain said materials handling member in its level position,

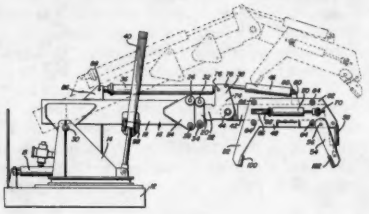
said second hydraulic cylinder means being fluidly connected to said third hydraulic cylinder means so that said boom means may be moved from its upper position to its lower position when said materials handling member is in its tipped-back position and so that said boom means may be moved from its lower position to its upper position when said materials handling member is in its dump position.

4,266,910

PIPE POSITIONER BOOM AND HEAD ASSEMBLY FOR PIPE LAYING FRAME

Kenneth L. Pickard, Tulsa, Okla., assignor to Pickard Equipment, Inc., Rochester, N.Y.

Filed Sep. 4, 1979, Ser. No. 72,215
Int. Cl.[3] B25J 3/00
U.S. Cl. 414—735 **8 Claims**



1. A grapple crane including a mount, an elongated boom including an elongated base section and at least one elongated extension section telescopingly supported from said base section for shifting between extended and retracted positions relative to one end of said base section and defining a free end section of said boom, first motor means operatively connected between said base and said extension section for controllably shifting said extension section relative to said base section, means pivotally supporting the other end of said base section from said mount for oscillation relative thereto about a horizontal axis extending transversely of said base section, second motor means operatively connected between said base section and said mount for adjustably angularly positioning said base section relative to said mount, a generally horizontal elongated support arm having one end pivotally supported from the free end of said extension section for oscillation relative thereto about a horizontal axis extending transversely of said arm and extension section, third motor means operatively connected between said extension section and said support arm for limited adjustable angular displacement of said support arm relative to said extension section, an elongated follower guidingly mounted on said support arm for adjustable shifting therealong, fourth motor means operatively connected between said arm and said follower for adjustably shifting the follower along said arm, one end portion of said follower including a first elongated depending jaw supported therefrom facing toward the other end portion of said follower, a second elongated laterally depending jaw pivotally supported at its upper end portion from the other follower end portion for oscillation

about an axis extending transversely of said follower and second jaw, and fifth motor means operatively connected between said follower and second jaw operative to adjustably angularly displace said second jaw relative to said follower, the lower end portions of said jaws including article engaging surfaces each facing toward the other jaw, said follower including a pair of opposite side plates between which said support arm is received, upper and lower pairs of longitudinally spaced rollers journaled between said plates and rollingly engaged with the upper and lower surfaces of said support arm, one of said plates including an elongated longitudinally extending slot, said support arm including a laterally outwardly projecting lug slidingly received in said slot, said fourth motor means being operatively connected between the outer end portion of said lug and said follower.

4,266,911

WIND POWER PLANT AND METHOD OF ERECTING IT

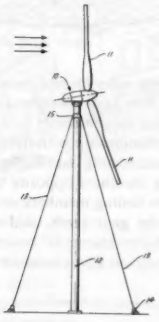
Siegfried Helm, Petershausen, and Peter Sprang, Munich, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 4, 1979, Ser. No. 36,272

Claims priority, application Fed. Rep. of Germany, May 30, 1978, 2823525

Int. Cl.³ F03D *11/04*

U.S. Cl. 416—9 **11 Claims**



1. A wind power plant comprising

(a) a wind power system including a power house having vanes rotatable by the wind,

(b) a tower carrying said power house, said tower being so constructed that it has a lower natural frequency of vibration between the lower and higher critical frequencies of vibration of said power system, and said tower being so constructed that it has a higher natural frequency of vibration above the higher critical frequency of vibration of said power system, and

(c) guy means supporting said tower.

4,266,912

ROTOR BLADE SUPPORT SETUP FOR ROTARY WING AIRCRAFT

Stephan Roman, 5 Milford Rd., R.D. 2, Downingtown, Pa. 19335

Filed Oct. 6, 1978, Ser. No. 949,277

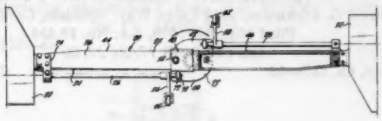
Int. Cl.³ B64C *27/38*

U.S. Cl. 416—141 **6 Claims**

1. A support for an aircraft provided with at least one rotary wing setup, comprising a rotary hub and a plurality of rotary wing assemblies supporting the rotary hub, at least one of which rotary wing assemblies includes both:

(a) a blade having a blade pitch axis which blade can be changed in its angular postion about the blade pitch axis, and

(b) a single and only flexible strap extending between the blade and the rotor hub and furnishing at least most of the supportive effect between them, the flexible strap having a line of shear centers which is at least substantially on the same straight line as the blade pitch axis, the cross section



of the flexible strap being asymmetrical relative to a line through its center of gravity and parallel to the axis of rotation of the rotary hub, and the line of shear centers of the flexible strap being spaced from its line of centers of gravity.

4,266,913

SWASH-PLATE TYPE COMPRESSOR

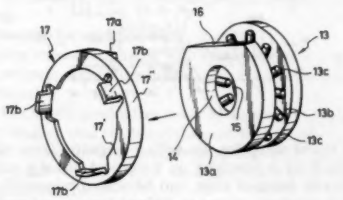
Hiroshi Nomura, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Apr. 19, 1979, Ser. No. 31,391

Claims priority, application Japan, May 22, 1978, 53/68935[U]

Int. Cl.³ F04B *1/14*

U.S. Cl. 417—269 **6 Claims**



1. In a swash-plate type compressor of the type having a pair of cylinder blocks combined together in an axial alignment, a drive shaft penetrating said combined cylinder blocks along axes thereof for rotation relative to said cylinder blocks, and a swash plate secured to said drive shaft, said combined cylinder blocks including a plurality of cylinder bores extending through the cylinder blocks axially thereof, each receiving a piston for sliding therein, and a plurality of spaces axially defined between adjacent cylinder bores, wherein said swash plate has an outer fringe thereof disposed in engagement with the piston thereby to rotate in unison with the drive shaft being rotated, for causing reciprocating motions of the piston with the cylinder bore to carry out a pumping action,

the improvement comprising:

a pair of thrust bearings fitted on said drive shaft at opposite front and rear sides of said swash plate for supporting thrust loads applied by said swash plate, each thrust bearing being interposed between a central boss portion of said swash plate and an associated central seat portion of a corresponding one of said cylinder blocks, said thrust bearings each including a bearing ring disposed in urging contact with said associated central seat portion of the corresponding cylinder block, said bearing ring having as least one engaging cut formed in a periphery thereof; and

a pair of annular retainers each interposed between said bearing ring and said associated central seat portion, said retainers each having one end face thereof formed with at least one first engaging axially directed protuberance for engagement with said engaging cut of said bearing ring, and the other end face of each retainer being formed with at least one second engaging axially directed protuberance

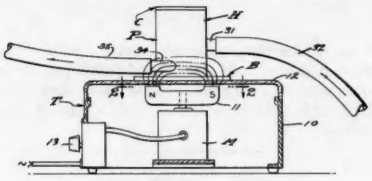
for engagement with an associated end of a corresponding one of said spaces.

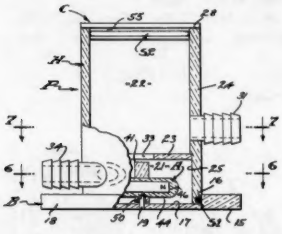
4,266,914

MAGNETIC DRIVE LABORATORY PUMP

David G. Dickinson, 1681 Larco Way, Glendale, Calif. 91202

Filed Mar. 12, 1979, Ser. No. 19,456
Int. Cl.³ F04B *17/00, 21/00*
U.S. Cl. 417—63 **22 Claims**





1. A liquid pump for use with a magnetic drive wherein a magnetic field is revolved on a vertical turning axis over a horizontally disposed table, and fabricated principally of non-magnetic members except as defined herein, and including; a planar base for superimposed support upon the drive table and having a pivot to be placed at the turning axis of said magnet field, a right cylinder housing upstanding from the base with its axis concentric with the pivot on the base and having a transverse wall separating the housing interior into an upper primer chamber and a lower impeller chamber and with a central opening in the wall for open communication between said chambers, a cover received by the housing to close the primer chamber, the impeller chamber being closed by the case, and a rotatable impeller supportably balanced upon the pivot and comprised of crossed blade and magnet bar members symmetrically disposed about the rotational axis of the pivot and substantially occupying the transverse cross sectional area of the impeller chamber, said magnet bar being encapsulated in a sheath and carried transversely through the blade with its north-south axis normal to and intersecting a vertical rotational axis of a pivot thereon complementary to and engageable with the first mentioned pivot on the base, there being a liquid inlet into the upper primer chamber and there being a liquid discharge opening from the impeller chamber and extending tangentially away from the direction of impeller rotation.

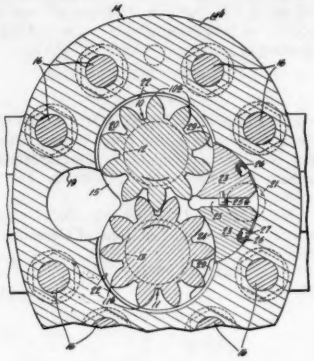
4,266,915

GEAR PUMPS AND MOTORS

James R. McBurnett, and James M. Eley, both of Corinth, Miss., assignors to Tyrone Hydraulics Inc., Corinth, Miss.

Continuation-in-part of Ser. No. 923,094, Jul. 10, 1978, abandoned. This application Apr. 13, 1979, Ser. No. 29,891
Int. Cl.³ F04C *15/00*
U.S. Cl. 418—126 **8 Claims**

1. In a pump or motor of the gear type wherein externally toothed drive and driven intermeshing gear elements are mounted for rotation about parallel axes, a housing forming a chamber within which the gears are mounted, said housing chamber having relieved wall portions at all points radially spaced from the tips of the teeth whereby the teeth are out of sealing relationship with said wall portions, separate passageways connected to said chamber on opposite sides of said gears, a pair of radial sealing members each having an arcuate sealing surface adjacent the gears and conforming to the path of the tips of the teeth, support means for said radial sealing members, said support means being seated in said housing for support thereby, said support means being disposed axially of



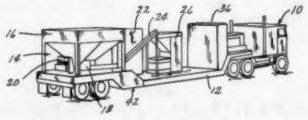
said gears on opposite sides thereof for supporting said sealing members adjacent the said passageways having the higher pressure, for limiting movement of said arcuate surfaces to a position of sealing relationship with the tips of the teeth of said gears, means communicating said higher pressure to the surface of said sealing members opposite to the arcuate sealing surface whereby the sealing members are urged by said higher pressure towards the gear teeth, said support means being positioned to limit the extent of movement of said sealing members to a zero or oil film clearance with the tips of said gear teeth.

4,266,916

MOBILE BLOCK PRODUCTION PLANT

Arnold A. Lubavs, 5331 NW. 57th Ave. "N", Des Moines, Iowa 50131

Filed Feb. 14, 1980, Ser. No. 121,497
Int. Cl.³ B28B *15/00*
U.S. Cl. 425—62 **6 Claims**



1. A mobile plant for production of concrete blocks, comprising:

a mobile block production station comprised of a vehicle having a bed, and mounted on said bed, a raw materials mixer, and

a block making machine, and

a conveyor extending from said mixer to said block machine to convey readily mixed concrete from said mixer to said block machine, and

a mobile curing station, independently movable with respect

to said block producing station, comprised of a trailer having a bed, and mounted on said bed at least two block curing kilns, each of said kilns being capable of independent function with respect to the other, for steam curing of blocks,

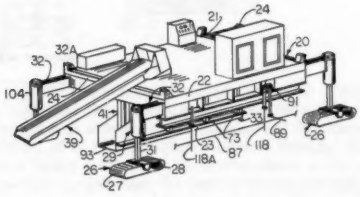
each of said kilns having an associated extendible canopy which may be extended from said kiln towards said block producing station so that fresh made blocks may be placed therein for curing by steam.

4,266,917

METHOD AND MACHINE FOR SLIP FORMING MEDIAN BARRIER WALLS FOR HIGHWAYS

Harold W. Godbersen, Ida Grove, Iowa, assignor to Gomaco, Inc., Ida Grove, Iowa

Filed Apr. 11, 1979, Ser. No. 29,262
Int. Cl.³ B28B *7/02*
U.S. Cl. 425—64 **6 Claims**



1. In a machine for slip forming a median wall barrier wherein the upper surface of the wall is maintained at a predetermined grade level, the combination comprising:

(a) a portable frame means,

(b) means supporting said frame means for moving engagement with a ground surface,

(c) said frame means including a pair of transversely spaced upright side structures and an upper supporting structure extended between and secured to said side structures adjacent the upper ends thereof,

(d) a slip form located between said side structures and extended longitudinally of said frame means, said slip form comprising:

(1) a top wall member secured in a suspended relation from said supporting structure, and

(2) a pair of upright side wall members arranged at opposite sides of said top wall member having upper portions adjacent to and projected upwardly from said top wall member,

(e) means movably supporting said side wall members on said frame means for up and down movement relative to said top wall member,

(f) means on said supporting structure for independently moving said side wall members relative to said top wall member,

(g) coacting means on said supporting structure and upright side structures for adjustably moving the side wall members toward and away from each other to position the upper portions of said side members adjacent opposite sides of said top member; and

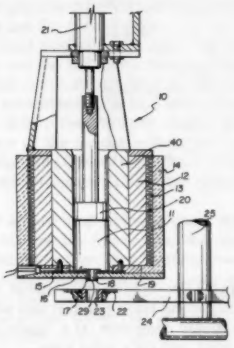
(h) grade conforming connections between said frame supporting means and said frame means to conform said slip form to said predetermined grade level.

4,266,918

APPARATUS FOR ELECTROSTATIC FIBRE SPINNING FROM POLYMERIC FLUIDS

Rockliffe S. Manley, Montreal, Canada, assignor to Pulp and Paper Research Institute of Canada, Pointe, Canada

Filed Sep. 6, 1978, Ser. No. 940,046
Claims priority, application Canada, Mar. 13, 1978, 298816
Int. Cl.³ D01D *5/00*
U.S. Cl. 425—66 **17 Claims**



1. Apparatus for producing a continuous filament from a rapidly crystallizable high molecular weight molten polymer comprising:

(a) a chamber for said polymer;

(b) heating means associated with said chamber for melting said polymer and for maintaining said polymer in molten condition;

(c) an electrically conductive material disposed at one end of said chamber, said electrically conductive member including an orifice formed therethrough, said orifice being an open-ended capillary tube unobstructed throughout the diameter thereof;

(d) controllabel means for applying a preselected controlled pressure to said molten polymer, said controlled pressure being sufficient to form a static flat meniscus of said molten polymer at said orifice, but being insufficient to extrude said molten polymer out of said orifice;

(e) an apertured plate formed of electrically conductive material disposed at a predetermined distance from said orifice, the aperture in said plate and said orifice being concentrically aligned; and

(f) means electrically connecting one pole of a DC power supply to said electrically conductive material through which said orifice is formed, and connecting the other pole of said DC power supply to said apertured plate thereby to create an electronic static field between said orifice and said apertured plate, the value of the applied voltage being large enough to overcome said static flat meniscus at said orifice and to form a cone terminating in a molten polymer jet, but being insufficient to generate an electrical discharge between said orifice and said apertured plate.

4,266,919

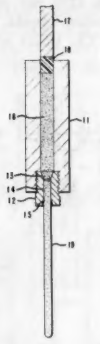
RAM-EXTRUSION APPARATUS FOR NON-MELT FABRICABLE POLYMERIC RESINS

Gordon B. Dunnington, Wilmington, and Carl H. Manwiller, Christiana, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 9, 1979, Ser. No. 65,068
Int. Cl.³ B29F *3/06, 3/014*
U.S. Cl. 425—102 **4 Claims**

1. In an apparatus for the ram-extrusion of non-melt fabricable polymeric resin comprising an extrusion chamber, a form-

ing die at the end of the extrusion chamber, and a ram for forcing the resin from the extrsion chamber through the forming die, the improvement wherein the ram head in initial contact with the walls of the extrusion chamber and with the



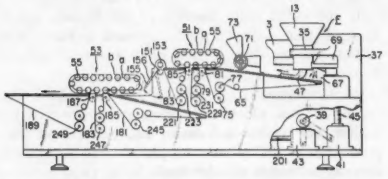
resin is consumable fluoropolymeric material which comprises at least about 10 percent fluoropolymer and wherein the forming die consecutively comprises (a) a compaction zone, (b) a back pressure zone, and (c) a relief zone.

4,266,920

APPARATUS FOR CONTINUOUSLY MANUFACTURING MULTI-LAYERED DOUGH MATERIALS

Torahiko Hayashi; Minoru Kageyama, and Michio Morikawa, all of Utsunomiya, Japan, assignors to Rheon Automatic Machinery Co., Ltd., Tokyo, Japan

Division of Ser. No. 665,326, Mar. 9, 1976, Pat. No. 4,113,819. This application Aug. 30, 1978, Ser. No. 937,967
Claims priority, application Japan, Mar. 10, 1975, 50-293557
Int. Cl.[3] A21C *3/00;* A01J *21/00*
U.S. Cl. 425—133.1 **21 Claims**



1. An apparatus for manufacturing food material having a plurality of layers of dough, including

means for forming food material into a strip having at least a layer of dough;

a series of conveyor belts;

means positioned between said dough forming means and said series of conveyors belts for receiving said strip and folding it onto the first conveyor belt of said series to form a pile thereon composed of a plurality of layers of said strip; and

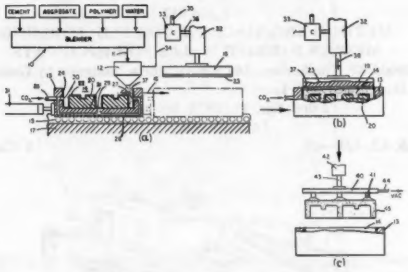
means including a plurality of rollers adapted to move about an endless roller path having a lower straight portion extending over each conveyor belt of said series for reducing the thickness of said pile, said first conveyor belt approaching said lower straight portion at an angle sufficient to increase the portions of said pile engaged initially by said rollers to assure the layers of said pile will remain laminar as said pile is initially engaged by said rollers.

4,266,921

METHOD AND APPARATUS FOR THE MANUFACTURE OF CONCRETE AND LIKE PRODUCTS

John A. Murray, Norristown, Pa., assignor to U.S. Terrazzo Panels, Inc., Conshohocken, Pa.

Division of Ser. No. 688,323, May 20, 1976, Pat. No. 4,117,060, which is a division of Ser. No. 388,558, Aug. 15, 1973, abandoned, which is a continuation-in-part of Ser. No. 336,362, Feb. 27, 1973, abandoned, which is a continuation-in-part of Ser. No. 106,364, Jan. 14, 1971, abandoned. This application Jul. 26, 1978, Ser. No. 928,295
Int. Cl.[3] B28B *7/36*
U.S. Cl. 425—158 **4 Claims**



1. Apparatus for forming concrete and like articles that have an advanced state of cure, comprising a mold having a mold cavity therein, said mold being devoid of any heating means and being exposed to the natural ambient temperature and adapted for receiving a blend of unheated concrete-forming or the like starting materials therein, a press member which is devoid of any heating means and exposed to the natural ambient temperature, means for effecting relative movement between the press member and the mold cavity for compacting materials in the mold under a desired force applied by said press member, means for delivering carbon dioxide gas to the interior of the mold cavity, and means for separating said press member from said mold cavity within about one minute after completion of said compaction, wherein said apparatus includes a preselected form disposed in said mold cavity about which the article-forming materials are to be disposed, said form being mounted on a surface thereof, for providing a desired configuration for the article to be formed, wherein said gas delivering means comprise delivery ducts extending through the mold and having ports thereof opening into the cavity thereof, the major surfaces of said mold, said press, and said form which engage said starting materials being constructed of non-heat sink surfaces which are adapted to substantially preserve the heat of reaction of said starting materials and said carbon dioxide gas when said starting materials are compacted, the non-heat sink surfaces of said press and said mold being adapted to form a seal when said starting material is compacted, said apparatus further comprising control means operatively associated with said means for effecting relative movement between said press member and said mold cavity, for actuating said relative movement before said blend of materials exhibits an exothermic temperature rise of about 16° F.

4,266,922

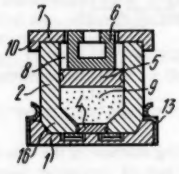
MOLD FOR MANUFACTURING ABRASIVE SEGMENTS

Mikhail N. Birjukov, prospekt Lenina, 35/20, kv. 91; Gennady N. Maslov, ulitsa Pervomaiskaya, 34/19, kv. 25, both of Elektrostal Moskovskoi oblasti; Vladimir P. Smorodinnikov, ulitsa Pobedy, 10, kv. 6, V. Dubrovo Sverdlovskoi oblasti; Anatoly P. Kulikov, ulitsa Vostochnaya, 5, V. Dubrovo Sverdlovskoi oblasti; Ida G. Udilova, ulitsa Pobedy, 10, kv. 2, V. Dubrovo Sverdlovskoi oblasti; Vladimir K. Zuev, ulitsa Sovetskaya, 11/2, kv. 55, Elektrostal Moskovskoi oblasti; Anatoly A. Lukyanov, ulitsa Rogozhskaya, 100b, Noginsk Moskovskoi oblasti; Konstantin S. Tolstopyatov, ulitsa Pervomaiskaya, 30, kv. 24, Elektrostal Moskovskoi oblasti; Alexandr E. Kalinichev, 1 Kommunalny proezd, 15/13, Elektrostal Moskovskoi oblasti, and Ivan Y. Zhabin, ulitsa 8 Marta, 58/a, kv. 6, Elektrostal Moskovskoi oblasti, all of U.S.S.R.

Filed Mar. 31, 1980, Ser. No. 135,323

Int. Cl.[3] B28B *7/00*; B29C *1/00, 1/16*

U.S. Cl. 425—182 4 Claims



1. A mold for manufacturing abrasive segments, comprising: a base; said base being formed with longitudinal shoulders; resilient members affixed on said longitudinal shoulders; sloping surfaces of said longitudinal shoulders forming an open, upwardly flaring nest; a split die accomodated in the nest of said base with the possibility for vertical movement and having a bottom, two end walls and two side walls; said end walls and side walls being placed around said bottom; the side walls of said die being arranged along said longitudinal shoulders and having sloping surfaces thereof in contact with the sloping surfaces of said longitudinal shoulders; means for fixing the side and end walls of said die in the upright position; means for lifting said die, said means being positioned between said base and said die; means for supporting the bottom of said die in the raised position after having lowered said die, said means being arranged between said base and said die after having raised said die; a plunger for transmitting the pressing force, said plunger being accomodated in said die.

4,266,923

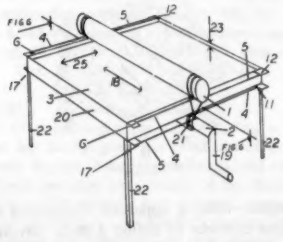
MEANS OF SUPPORT FOR THE ROLLERS OF A PRESS

John J. Curnes, 2127 Irving St., Denver, Colo. 80211

Filed Feb. 21, 1980, Ser. No. 123,220

Int. Cl.[3] A21C *3/02*

U.S. Cl. 425—356 5 Claims



1. A means of support of rollers for a roller press consisting of a press bed, two rollers and four cables in tension, wherein rotation of a first roller imparts corresponding rotation to a second roller, comprising in combination:

the press bed containing a frame composed of a first side disposed parallel and apart from a second side, and a third side disposed parallel and apart from a fourth side, the combination of sides describing the lateral extremities of the press bed,

a first roller laterally disposed and free to roll atop the first side and the second side,

a second roller laterally disposed and free to roll underneath the first side and the second side,

a first cable affixed atop and adjacent to the intersection of the first side and the third side, then spanning to the bottom of the first roller, then looping around counter clockwise the circumference of the first roller, then spanning to the second roller, then looping clockwise around the circumference of the second roller, then spanning to its extremity where the first cable is affixed at the bottom and adjacent to the intersection of the first side and the fourth side,

a second cable affixed atop and adjacent to the intersection of the first side and the fourth side, then spanning to the bottom of the first roller, then looping around clockwise the circumference of the first roller, then spanning to the second roller, then looping counter clockwise the circumference of the second roller, then spanning to its extremity where the second cable is affixed at the bottom and adjacent to the intersection of the first side and the third side,

a third cable affixed atop and adjacent to the intersection of the second side and the third side, then spanning to the bottom of the first roller, then looping around counter clockwise the circumference of the first roller, then spanning to the second roller, then looping clockwise around the circumference of the second roller, then spanning to its extremity where the third cable is affixed at the bottom and adjacent to the intersection of the second side and the fourth side, and

a fourth cable affixed atop and adjacent to the intersection of the second side and the fourth side, then spanning to the bottom of the first roller, then looping around clockwise the circumference of the first roller, then spanning to the second roller, then looping counter clockwise the circumference of the second roller, then spanning to its extremity where the fourth cable is affixed at the bottom and adjacent to the intersection of the second side and the third side.

4,266,924

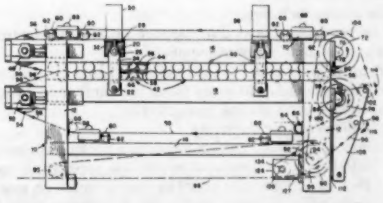
TRANSMISSION DRIVE WITH CYCLIC SPEED VARIATIONS AND USES THEREOF IN COMPACTION SYSTEMS USING DUAL WIRE-MESH BELTS

Jerry R. Fram, 10627 Rochester Ave., Los Angeles, Calif. 90024

Filed Aug. 9, 1979, Ser. No. 65,189

Int. Cl.[3] A01J *21/00*; B32B *3/00, 5/02*

U.S. Cl. 425—372 6 Claims



1. In a dual wire-mesh belt compaction system for the wet-out of glass fiber rovings by a sheet molding compound paste carried between films which are sandwiched between two wire-mesh belts horizontally moving in the same direction and

respectively driven by two drum rolls positioned at one end of the compaction system,

an arrangement for imparting a velocity-variable motion to the wire-mesh belt driven by one of said drum rolls, thereby to produce a shearing type of action between said belts, said arrangement comprising:

a first sprocket wheel coaxial with and coupled to one of said drum rolls,

a second sprocket wheel coaxial with and coupled to the other of said drum rolls,

said first sprocket wheel being rotatably driven by an endless transmission chain driven by a drive sprocket wheel,

a pair of idler sprockets, each mounted on an axle,

one segment of said endless chain being partially would around one of said idler sprockets and another segment of said chain being partially wound around the other of said idler sprockets,

a linkage arm in which the axles of said two idler sprockets are rotatably mounted, thereby to fix the spacing between said axles,

said arm being mounted for rocking movement about the axis of said first sprocket wheel, and

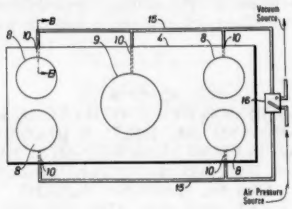
means for imparting to said arm an oscillating, rocking movement in such a way that the length of the portion of said endless chain extending between the exit side of said first idler sprocket wheel and the entrant side of the drive sprocket wheel is lengthened during a half cycle of said oscillating movement while the portion of said endless chain extending between the exit side of said drive sprocket wheel and the entrant side of said first idler sprocket is shortened by a corresponding amount during said half cycle, and vice versa during the other half cycle of said oscillating movement.

4,266,925

APPARATUS FOR SURFACE EMBOSSING MAN-MADE LIGNOCELLULOSIC BOARD

Book, Niles E. E., deceased, late of Motala, Sweden (by Inga Book, administrator), assignor to AB Motala Verkstad, Motala, Sweden

Filed Mar. 16, 1979, Ser. No. 20,830
Int. Cl.³ A01J *21/00*
U.S. Cl. 425—387.1 **10 Claims**



1. In an apparatus for embossing a preformed particle board or the like comprising:

press means including

a first press plate shaped to support a preformed board and a cooperating opposed member,

said press plate and opposed member being adapted to be moved towards and away from one another to close and open said press means, respectively,

the improvement comprising

means to establish suction between a board positioned on said first press plate and an adjacent supporting surface thereof to retain the board in fixed position on said first press plate, wherein said board is stripped away from said opposed member when the press is opened following an embossing operation, and

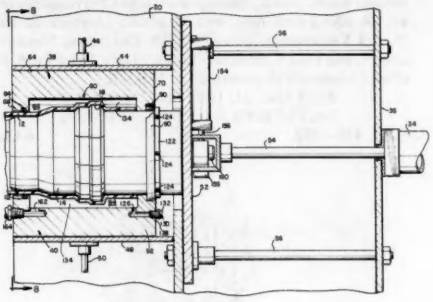
means for releasing said suction and establishing fluid pressure between said board and the adjacent supporting surface of the press plate when the press is opened and the board and opposed member are in nearby closely spaced relation, to free the board from the adjacent supporting surface of the press plate.

4,266,926

PIPE BELLING WITH EXTERNAL FLUID PRESSURE

John H. Gordon, 855 Brandywine Rd., Downingtown, Pa. 19335

Filed Sep. 21, 1979, Ser. No. 77,658
Int. Cl.³ B29D *23/00*
U.S. Cl. 425—387.1 **18 Claims**



1. In a pipe belling machine of the type suitable to impress a bell shape in an end of successive lengths of plastic pipe wherein the end has been softened, the combination of

a frame;

a shaped mandrel mounted on the frame and adapted for reciprocal movement into and out of the softened end of the pipe for forming a bell shape; and

pressure chamber means mounted on the frame and adapted for movement to encompass the softened end of the pipe and the shaped portion of the mandrel,

the pressure chamber means comprising upper and lower sealing means to form a pressure retaining chamber about the softened end of the pipe; and

means to introduce a fluid under pressure into the pressure retaining chamber;

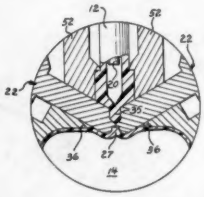
whereby the pressurized fluid presses against the softened end of the pipe and presses the softened end against the mandrel.

4,266,927

APPARATUS FOR MOLDING A PLASTIC ARTICLE

Robert W. Gilbert, Libertyville, and Gunther W. Torau, Buffalo Grove, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 13,783, Feb. 21, 1979, abandoned. This application Jul. 19, 1979, Ser. No. 58,934
Int. Cl.³ B29C *17/07*
U.S. Cl. 425—526 **16 Claims**



1. In a plastic molding apparatus comprising a plurality of mold sections closable to define a mold having an interior cavity of selected shape about a heated plastic parison and means for expanding said parison to conform to the shape of said interior cavity, opening means in said cavity through

which said parison extends, the improvement comprising means for sealing said parison comprising a pair of sealing members including facing parison engaging surfaces on opposite sides of said parison and movable relative to said mold sections to engage said parison between said facing parison engaging surfaces, each of said parison engaging surfaces comprising a protruding surface portion with an elongated narrow pinch edge for pinching the parison together, and a recessed surface portion therebelow defining a plastic receiving reservoir, said interior cavity of said mold defining a generally planar surface adjacent said opening means through which said parison extends, said sealing members being movable to seal said parison therebetween in the area of said opening means whereby said recesses form a thickened seal portion substantially in the same plane as said planar surface.

4,266,928

FILLING DEVICE FOR INTRODUCING PRE-FOAMED POST-EXPANDABLE THERMOPLASTICS INTO MOLDS FOR THE PRODUCTION OF MOLDINGS

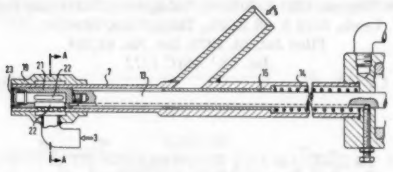
Richard Weidner, Puttelange-aux-Lacs, France, and Ortwin Hahn, Paderborn, Fed. Rep. of Germany, assignors to CIVAG AG Institut für Verpackungsforschung

Filed Nov. 13, 1979, Ser. No. 93,107

Claims priority, application Fed. Rep. of Germany, May 31, 1979, 2922312

Int. Cl.³ B29B 5/04; B29D 27/00

U.S. Cl. 425—584 **6 Claims**



1. Filling device for introducing pre-foamed, post-expandable thermoplastics into molds for the production of moldings from plastic foams, especially from pre-foamed polystyrene foam, in which device the pre-foamed plastic is introduced in granular form into the mold by reason of a pressure difference existing between the stock container for the plastic granules and the mold and/or the introduction of injected air, the said device comprising a cylindrical piston case with a lateral feed pipe for the plastic granules and a piston, which is movable in the longitudinal direction within the cylindrical piston, case for closing the mold inlet orifice after filling has taken place, characterized by a movable shut-off sleeve, which, by means of a spring, blocks the supply of granules when the piston has passed the feed pipe in the direction towards the mold.

4,266,929

FLUID ACTUATED DAMPER CONTROL APPARATUS

Paul F. Swenson, 25525 Edgecliffe, Euclid, Ohio 44132

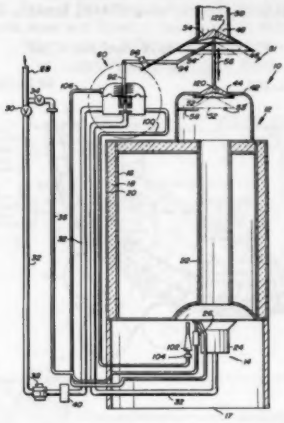
Continuation of Ser. No. 933,355, Aug. 14, 1978, abandoned, which is a continuation-in-part of Ser. No. 881,733, Feb. 27, 1978, Pat. No. 4,182,483, which is a continuation-in-part of Ser. No. 704,548, Aug. 12, 1976, Pat. No. 4,076,171. This application Oct. 29, 1979, Ser. No. 88,860

Int. Cl.³ F23N 3/00

U.S. Cl. 431—20 **3 Claims**

1. In a fuel fired heating apparatus including a fluid fuel burner, a vent for discharging the products of combustion produced by said burner, a damper means in said vent, and a fluid motor means operated by pressure of the fluid fuel supplied to the burner for moving said damper means between open and closed positions in coordinated relationship with the firing of said burner, the improvement comprising:

actuating means associated with said fluid motor means to assure movement of said damper means to an open position during periods of abnormally low fuel pressure being supplied to said burner,



said actuating means including at least one magnet member positioned to provide a damper means opening force additive to the force produced by said fluid motor.

4,266,930

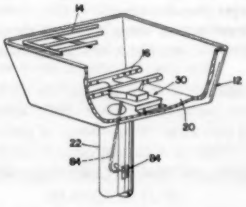
GAS COLLECTOR/SPARK IGNITER FOR GAS BURNERS

Murray Leonard, Mayfield, and Herbert F. Jugl, Bedford, both of Ohio, assignors to Vernitron Corporation, Bedford, Ohio

Filed Sep. 11, 1978, Ser. No. 941,281

Int. Cl.³ F23Q 7/06

U.S. Cl. 431—263 **5 Claims**



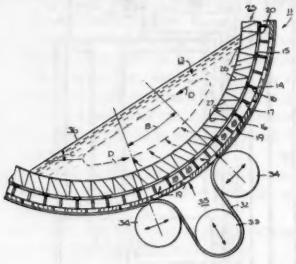
1. A spark igniter for gas burners comprising: a gas collector made of metal and having a passage between open front and rear ends, said front end havin a substantially larger opening than said rear end, said passage having a large passage portion from said front end to a transition point intermediate said front and rear ends and having a substantially smaller passage portion from said transition point to said rear end, said gas collector having top and bottom walls, electrode means mounted on said bottom wall and extending upwardly therethrough, said electrode means having an electrode tip positioned within said small passage portion in closely spaced relationship to said top wall and defining a spark gas therewith for providing a spark and igniting a combustible mixture flowing through said smaller passage portion, and lips extending inwardly around at least a portion of said open front end.

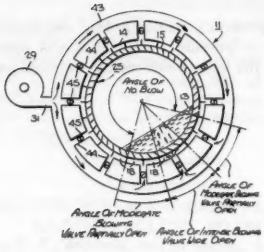
4,266,931

APPARATUS AND METHOD OF HEATING PARTICULATE MATERIAL

Holger Struckmann, 104 S. Alward Ave., Basking Ridge, N.J. 07920

Filed Feb. 1, 1979, Ser. No. 8,268
Int. Cl.³ F27B 7/36
U.S. Cl. 432—105 **17 Claims**





1. A rotary combustion bed
comprising a rotary drum having a longitudinal axis and defining a chamber to receive and cascade a charge of particulate material, said drum including an outer shell, a perforated inner shell and a plurality of spacer plates secured to and between said shells to define air distribution passages therebetween;
a permeable refractory lining disposed about said chamber of said drum to receive a cascading charge of material thereon;
means for passing a flow of combustion air into selected air distribution passages to flow radially upwardly through said lining into a cascading charge of particulate material in said chamber at a circumferential angle over a given angle of blow; and means for adjusting said predetermined angle.

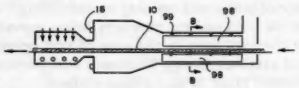
4,266,932

HEATING FURNACE

Yoshiaki Shinohara, Kurashiki, Japan, assignor to Kawasaki Steel Corporation, Kobe, Japan

Continuation-in-part of Ser. No. 927,850, Jul. 25, 1978, Pat. No. 4,229,163. This application Mar. 20, 1979, Ser. No. 22,094
Claims priority, application Japan, Jul. 25, 1977, 52-89680
Int. Cl.³ F27B 7/00
U.S. Cl. 432—194 **7 Claims**

1. A heating furnace for heating bodies by combustion flame comprising:
furnace tail preheating zones;
heating zones;
conveying means which moves said heating bodies longitudinally in the heating furnace;
furnace walls which cover said conveying means with said heating bodies;
burners which are attached to said furnace so as to heat said heating bodies by fuel combustion flames and which produce a flow of combustion flames in said longitudinal direction; and



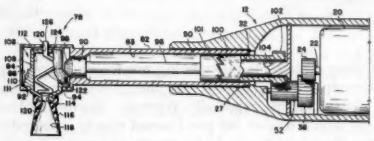
heat transfer converters disposed at furnace tail preheating zones and comprising plate-like heat resistant materials disposed parallel to the flow of combustion flames of said burners, wherein said heat transfer converters are heated through convection heat transfer from high temperature and high speed flow of the combustion flame to increase the radiation heat transfer to said heating bodies.

4,266,933

ROTARY DENTAL POLISHING APPARATUS

Fuller Warden, 1231 E. 30th Pl., Tulsa, Okla. 74114, and Eugene W. Lewis, 5415 S. 68 E. Pl., Tulsa, Okla. 74145

Filed Jul. 30, 1979, Ser. No. 61,764
Int. Cl.³ A61C 1/12
U.S. Cl. 433—82 **18 Claims**



14. A cartridge for the polishing of teeth comprising:
(a) a rotatable cylindrical housing having a cavity therein for containing polishing paste material;
(b) a hollow polishing cup substantially rigidly secured to a first end of the housing for rotation therewith, the hollow portion thereof being in open communication with the housing cavity; and
(c) conveyor means journalled within the cavity, a shaft member having one end thereof rigidly secured to the conveyor means, the other end extending external of the cavity at the second end of the housing.

4,266,934

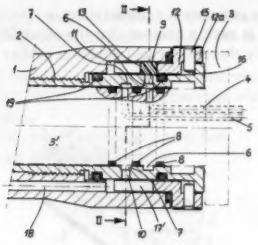
DENTAL HANDPIECE WITH FLUID DELIVERY CONTROL

Jacques Pernot, Besancon, France, assignor to Micro-Mega, S.A., Besancon, France

Filed Sep. 7, 1979, Ser. No. 73,501
Claims priority, application France, Sep. 11, 1978, 78 26633
Int. Cl.³ A61C 1/00
U.S. Cl. 433—85 **5 Claims**

1. A dental handpiece provided with means for controlling the delivery of fluids to the tool, which comprises an air supply conduit and a water supply conduit from the motor and an outlet conduit directed to the head of the handpiece, wherein said water and air supply conduits open each into a circular groove, respectively, formed in the inner periphery of a socket which is an easy fit to the retaining end of the motor, said

socket having two radial ports formed through its wall, said ports being off-set both axially and angularly, and opening on the one hand into said grooves and on the other hand into an annular chamber formed between said socket and the body of the handpiece, said outlet conduit being connected to said chamber, a rotary ring adapted to be easily rotated from outside being mounted in said chamber and provided in its periph-



eral wall with a pair of seals off-set axially to the same extent as said ports formed in the socket, said seals being so shaped that in the first limit position of said ring the first seal closes the water supply port while the second seal uncovers the air supply port, in a second limit position said first seal uncovers said water supply port while said other seal closes said air supply port, an intermediate position of said ring causing said seals to free both air and water supply ports.

4,266,935

PROTECTIVE SLEEVE FOR THE HANDLE OF A DENTAL INSTRUMENT

Gert Hoppe, Hagenstrasse 20 1/2, D-6840 Lampertheim, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 62,230, Jul. 30, 1979, abandoned. This application Dec. 26, 1979, Ser. No. 105,461

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1978, 2834797

Int. Cl.[3] **A61C** *1/16*

U.S. Cl. 433—116 **3 Claims**

1. A sterilized protective sleeve for the handle of a dental instrument comprising a shank having a tip for carrying a tooth treating tool which, in turn, has a tool shank comprising:

a sleeve consisting of an elastic and pliable tubular casing of synthetic resin and adapted to conform to the shank of said instrument, said tubular casing defining a first opening at one end thereof for receiving said instrument shank and enabling the casing to be pulled thereover and a second opening at an opposite end; and

an annular, disc-shaped protective member integrally attached to said opposite end of said sleeve so that it projects from said second opening, said member being made of a shape-retaining synthetic resin, and having an inner surface defining a through bore configured and dimensioned so as to define a radial clearance sufficient for said tool shank to pass freely and unhindered therethrough.

4,266,936

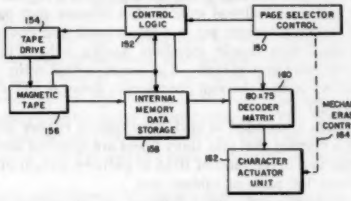
BRAILLE DISPLAY READER

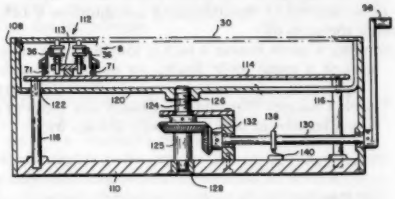
Leonard Rose, 184 Seapit Rd., East Falmouth, Mass. 02536, and Stanley E. Rose, 9 Broadway, Saugus, Mass. 01906, assignors to Leonard Rose and Stanley Rose, both of Falmouth, Mass.

Filed Nov. 6, 1978, Ser. No. 958,253

Int. Cl.[3] **G09B** *21/02;* **G06K** *9/00*

U.S. Cl. 434—114 **25 Claims**





1. A device for displaying a plurality of braille characters, comprising:

a surface on which the plurality of characters are displayed;

means, cooperative with data storage medium having data stored therein representative of a plurality of braille characters, for reading the data representative of the braille characters from the data storage medium and for periodically producing electrical pulse signals representative thereof;

display means for being thermally activated by said periodically-produced electrical pulse signals to cause a mechanical displacement to provide a tactilely-sensible representation of a plurality of braille characters;

means for maintaining, after said display means is activated by said periodically-produced pulse signals, the tactiley-sensible representation of a plurality of braille characters currently provided thereby without the necessity of electrical power being applied thereto; and

means for applying the electrical pulse signals from the reading means to the display means.

4,266,937

ADJUSTLESS V-BELT AND METHOD OF MANUFACTURE

Hiroshi Takano, Miki, Japan, assignor to Mitsuboshi Belting Ltd., Kobe, Japan

Filed Apr. 20, 1979, Ser. No. 31,799

Claims priority, application Japan, Apr. 26, 1978, 53-50671

Int. Cl.[3] **F16G** *5/16, 1/26;* **B29H** *7/22*

U.S. Cl. 474—205 **20 Claims**

1. A V-belt comprising:

a compressive rubber layer;

an adhesion rubber layer laminated on said compressive rubber layer having a Shore hardness of from 60° to 80°;

a group of cogs protruding from said adhesion rubber layer on the outer surface of said belt having a predetermined pitch and depth defined by;

$$1.5t < p < 3.5t$$

$$0.12d < t < 0.4d$$

where, p is the pitch of said group of cogs, t is the depth of said group of cogs, and d is the thickness of said V-belt;

a longitudinally stretchable cover canvas covering said cogs, and the roots between said cogs, said cover canvas obtained by weaving curled nylon warps subjected to wooly treatment and ordinary nylon wefts;

rope tensile members embedded between said adhesion rubber layer and said group of cogs with a regular pitch line and in cylindrical state such a manner that parts of said tensile members are in contact with said cover canvas, said rope tensile members having a high thermal contraction stress at least 3.5 g/denier, which is the differential between a thermal contraction stress at 100° C. and that at 20° C.;

short fibers embedded in said compressive rubber layer in such a manner that said short fibers are oriented laterially therein and in the ratio of 10 to 30 parts by weight of short fibers to 100 parts of rubber; and

a ply of rubberized canvas bonded, in lamination, to the lower surface of said compressive rubber layer.

18. A method of manufacturing an adjustless V-belt, comprising the steps of:

winding a cover canvas which is longitudinally stretchable around a metal mold having an outer wall with strip-shaped protrusions and grooves are alternately formed in such a manner that said protrusions and grooves extend along the axis of said metal mold defined by;

$$1.5h < w < 3.5h$$

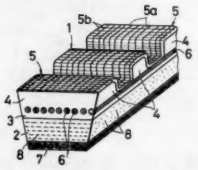
$$0.12d < h < 0.4d$$

where w is the pitch of said protrusions, h is the height of said protrusion, and d is the thickness of said V-belt;

spirally winding a rope tensile member around said cover canvas at a winding tension of 1.5 to 3.5 times the ordinary tension which is 0.2 to 0.6 g/denier, said rope tensile member subjected to thermal elongation treatment and having a high thermal contraction stress of at least 3.5 g/denier which is the differential between a thermal contraction stress at 100° C. and that at 20° C.;

winding an adhesion rubber sheet on said rope tensile member;

winding a compressive rubber sheet in which short fibers are mixed in such a manner that the short fibers are oriented laterally therein, on said adhesion rubber sheet;



winding at least one ply of rubberized canvas onto said compressive rubber sheet, to form a molded belt blank;

placing a cylindrical sleeve over said molded belt blank;

pressurizing and heating said molded belt blank together with said cylindrical sleeve, to permit a part of said adhesion rubber sheet to fill the grooves of said metal mold;

cutting the molded belt blank into a plurality of belt rings; and

turning said belt rings inside out to form said V-belt.

4,266,938

METHOD OF REMOVING PAINT FROM CLOTH

Will A. Ward, 359 W. Bissell, Richmond, Calif. 94801

Filed Mar. 28, 1980, Ser. No. 134,938

Int. Cl.[3] B08B *3/04*

U.S. Cl. 8—137 3 Claims

1. A method of removing a water based paint stain which has dried from a cloth object having at least two sides comprising the steps of:

a. applying water to the stained portion of the cloth object to the point of retention of the water by said cloth at the stain area;

b. applying a mixture of soap and pumice material to both sides of the cloth object at the area of the stain while water is retained thereat;

c. lathering said soap and pumice mixture; and

d. drying said soap and pumice mixture.

4,266,939

COMPOSITION OF 4-AMINO-4'-NITROSTILBENE-2,2'-DISULPHONIC ACID DIAZO COMPOUNDS AND COLORING PROCESS

John D. Hildreth, Macclesfield; Anton F. Tschopp, Oldham, and David G. Evans, Rochdale, all of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

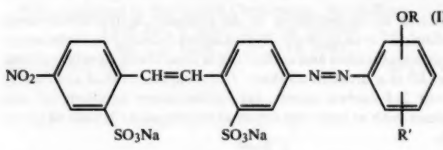
Filed Jun. 4, 1979, Ser. No. 45,522

Claims priority, application United Kingdom, Jun. 7, 1978, 26466/78

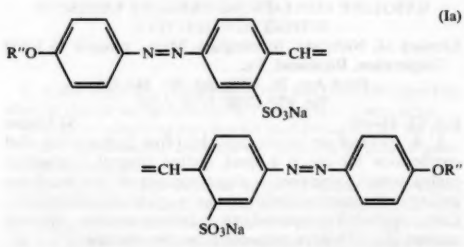
Int. Cl.[3] C09B *27/00;* D06P *1/00*

U.S. Cl. 8—437 6 Claims

1. A composition comprising a dyestuff of the formula IIa



in which R is hydrogen or an alkyl group having 1 to 6 carbon atoms and R' is an alkyl group having 1 to 6 carbon atoms, and a dyestuff of the formula Ia



in which R" is an alkyl group having 1 to 6 carbon atoms.

4,266,940

METHOD FOR DYEING ACRYLONITRILE POLYMER AND COPOLYMER FIBRES

David Blackburn, Leeds, and Malcolm S. Wild, Heckmondwike, both of England, assignors to Yorkshire Chemicals Limited, Leeds, England

Filed Mar. 2, 1979, Ser. No. 16,690

Claims priority, application United Kingdom, Mar. 2, 1978, 8218/78

Int. Cl.[3] D06P *3/70*

U.S. Cl. 8—538 9 Claims

1. A process for the colouration of wet spun acrylic or modacrylic fibres in gel form, said process comprising

dyeing said fibres at 20°–110° C. from a bath in which a cationic dye or dye base is dissolved, wherein said bath contains a highly polar organic solvent in which acrylonitrile polymer and copolymer of said fibers are soluble and in which said dye and dye base are soluble or partly soluble;

removing said fibres after colouration from said bath; and

rinsing said coloured fibres with an aqueous medium without substantially removing said dye from said fibres; wherein said dye has the formula

$$D^+X^-$$

where D represents a cationic dye radical containing a chromophoric group and X represents an anion that renders the dye substantially insoluble in water; and

wherein said highly polar organic solvent is selected from the group consisting of dimethylformamide, dimethylacetamide, dimethylsulphoxide, ethylene glycol carbonate and mixtures thereof.

4,266,941

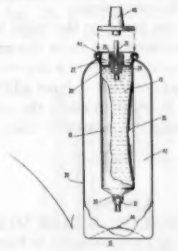
METHOD OF ASSURING THE QUALITY OF THE RESULTS OBTAINED FROM A BLOOD GAS ANALYZER

Kevin J. Sullivan, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jan. 12, 1979, Ser. No. 3,072

Int. Cl.[3] G01N *33/48*

U.S. Cl. 23—230 B 3 Claims



1. A method of assuring that the results obtained from a blood gas analyzer meet a quality control standard comprising the following steps:

obtaining a plurality of samples of blood to be analyzed;

analyzing the gas content of some of said samples with said analyzer;

providing a quantity of a quality control reagent in a first container having a variable volume and being gas impermeable and having a one way exit valve therein, said first container being surrounded by a second, non-deformable container, said first and said second containers being separated by compressed gas;

inserting a first portion of said quantity into said analyzer;

analyzing the gas content of said first portion with said analyzer;

analyzing the gas content of additional samples;

inserting a second portion of said quantity into said analyzer; and

comparing the results of the analysis of said first and said second portions.

4,266,942

METHOD FOR THE AUTOMATIC ELECTRO-CHEMICAL DETERMINATION OF THE END POINT OF A TITRATION

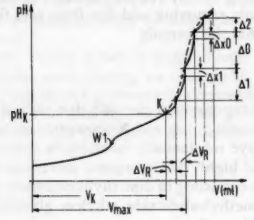
Chris Vandenbossche, Zwijnaarde, and Jacky Vanhumbeeck, Brugge, both of Belgium, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 21, 1980, Ser. No. 113,537

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1979, 2905287

Int. Cl.³ G01N *31/16, 27/44*

U.S. Cl. 23—230 R **7 Claims**



1. An improved method for the automatic, electro-chemical determination of the end point of a titration of the type in which the titrant is added to a bath sample in constant volume units, a measured value is formed after every titrant addition, the difference from the preceding value is formed after every measured value formation, and the three consecutive additions having the greatest caculated differences are utilized in calculating the end point and wherein the titration is interrupted when the greatest difference lies between two lesser differences, the improvement comprising:

continuously adding the titrant to the initial bath sample, up to a selectively predetermined value thereafter adding the titrant in constant volume units in a step-wise manner; and

separating each of said constant volume additions by a resting period of time in order to allow the solution to stabilize prior to obtaining the measured value.

4,266,943

STABILIZERS FOR OIL-WATER MIXTURES

Shih H. Lo, Central, Hong Kong, assignor to Farsan Enterprises Limited, Hong Kong

Filed Nov. 19, 1979, Ser. No. 95,408

Claims priority, application United Kingdom, Nov. 17, 1978, 45082/78

Int. Cl.³ C10L *1/18, 1/30*

U.S. Cl. 44—51 **23 Claims**

1. A stabilising agent for an oil-water mixture comprising the following components:

a combustible emulsifier	6 to 11.5 parts by weight
ferrocene	4 to 9 parts by weight
magnesium (as an oil-soluble magnesium salt)	4.5 to 9.2 parts by weight
anionic surfactant	1.4 to 3 parts by weight
benzoic acid	0 to 12 parts by weight

in an oil-based liquid medium.

4,266,944

FUEL COMPOSITIONS CONTAINING ACYL GLYCINE OXAZOLINES

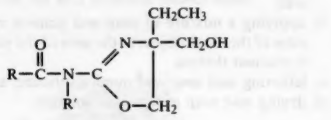
Rodney L. Sung, Fishkill, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 17, 1979, Ser. No. 104,520

Int. Cl.³ C10L *1/18, 1/22*

U.S. Cl. 44—63 **4 Claims**

1. A corrosion-inhibiting and detergent compound of the formula:



in which R represents lauryl, $C_{11}H_{23}$, oleyl or stearyl; and R′ is hydrogen or lower alkyl.

4,266,945

MOLYBDENUM-CONTAINING COMPOSITIONS AND LUBRICANTS AND FUELS CONTAINING THEM

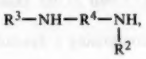
Jack L. Karn, Richmond Heights, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed Nov. 23, 1979, Ser. No. 96,876

Int. Cl.³ A01M *23/00, 23/16*

U.S. Cl. 44—68 **21 Claims**

1. A method for preparing a molybdenum-containing composition substantially free of Group IA and IIA metals which comprises reacting, at a temperature up to about 200° C., a mixture comprising (A) at least one acid of molybdenum, or salt thereof; (B) at least one phenol, or condensation product of said phenol with at least one lower aldehyde; and (C) at least one compound selected from the group consisting of (1) amines having the formula



wherein R^2 is hydrogen or an aliphatic hydrocarbon-based radical, R^3 is an aliphatic hydrocarbon radical free from acetylenic unsaturation and containing at least about 6 carbon atoms, and R^4 is a divalent aliphatic hydrocarbon radical containing about 2–8 carbon atoms; (2) condensation products of said amines with at least one lower aldehyde; and (3) salts of (1) or (2).

4,266,946

GASOLINE CONTAINING EXHAUST EMISSION REDUCING ADDITIVES

Leonard M. Niebylski, Birmingham, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Apr. 28, 1980, Ser. No. 144,396

Int. Cl.³ C10L *1/18, 1/30*

U.S. Cl. 44—68 **92 Claims**

1. A lead-free or substantially lead-free hydrocarbon fuel composition for use in a spark ignited internal combustion engine which comprises a major amount of hydrocarbons boiling in the gasoline boiling range, a cyclopentadienyl manganese antiknock compound and an exhaust emission reducing amount of a polyester prepared from the reaction of a compound selected from a dimer acid, a trimer acid or a mixture of a dimer and trimer acid produced by the polymerization or

condensation of an unsaturated aliphatic monocarboxylic acid having from 16 to about 22 carbon atoms per molecule and a lower alkyl aliphatic monohydric alcohol.

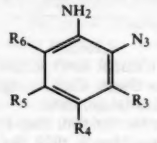
4,266,947

GASOLINE COMPOSITION CONTAINING ARYL O-AMINOAZIDES

Robert J. Hartle, Gibsonia, and Gary M. Singerman, Monroeville, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed May 21, 1980, Ser. No. 151,812
Int. Cl.³ C10L 1/22
U.S. Cl. 44—68 **11 Claims**

1. A gasoline motor fuel composition comprising a major amount of gasoline and a minor amount of an aryl o-aminoazide having the following general formula



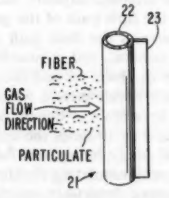
wherein each R group is independently selected from hydrogen, alkyl having from one to about four carbon atoms, alkenyl having from two to about four carbon atoms, haloalkyl having from one to about four carbon atoms, aryl having from six to about ten carbon atoms, cycloalkyl having from five to about eight carbon atoms, alkoxy having from one to about four carbon atoms, carbalkoxy having from two to about five carbon atoms, carbaryloxy having from seven to about nine carbon atoms, alkylamino having from one to about four carbon atoms, acyl having from two to about five carbon atoms, hydroxyl, amino, cyano, nitro, halo and halophenyl, or wherein any two adjacent R groups containing a total of four carbon atoms are joined together in a saturated or unsaturated ring.

4,266,948

FIBER-REJECTING CORONA DISCHARGE ELECTRODE AND A FILTERING SYSTEM EMPLOYING THE DISCHARGE ELECTRODE

Richard K. Teague, and Henry H. S. Yu, both of Winston-Salem, N.C., assignors to Envirotech Corporation, Menlo Park, Calif.

Filed Jan. 4, 1980, Ser. No. 109,695
Int. Cl.³ B03C 3/12, 3/14, 3/41
U.S. Cl. 55—126 **20 Claims**



1. A fiber-rejecting corona discharge electrode for imparting electric charge to particulates in a gas stream, comprising:

an arcurate shielding member for positioning within the path of a gas stream to confront the direction of flow of gases along said path;

a corona discharge member having a radius of curvature about a terminal end, the corona discharge member being connected to the shielding member and projecting radially outwardly from the elongate axis of the shielding member such that when placed in said path the corona discharge member is downstream from the shielding member, the radius of curvature of the shielding member being larger than the radius of curvature of the corona discharge member in a plane perpendicular to the direction of elongation of the electrode, and the cross-sectional perimeter around the connected shielding member and corona discharge member being greater than 1.25 inches.

15. A system for filtering fibers and particulates from a gas stream comprising:

a fiber separator for positioning in the path of a gas stream for removing fibers in gross quantities from said gas stream;

a corona charging apparatus for positioning within said path downstream of the fiber separator for imparting electric charge to particulates in said gas stream and to fibers that escape removal from said gas stream by the fiber separator, the corona charging apparatus including a fiber-rejecting corona discharge electrode having a shielding member connected to a corona discharge member such that said shielding member faces generally upstream and said corona discharge member faces generally downstream when positioned in the path of said gas stream such that the shielding member shields said corona discharge member from entanglement with fibers in said gas stream, the radius of curvature of said shielding member being larger than the radius of curvature of said corona discharge member in a plane perpendicular to the direction of elongation of the electrode, and the cross-sectional perimeter around said electrode being greater than 1.25 inches; and

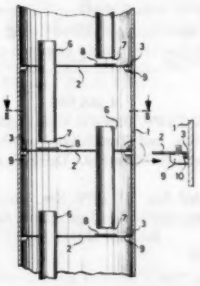
an electro-static filter medium positioned downstream of the corona charging apparatus for removing electrically charged particulates and fibers from said gas stream.

4,266,949

DEGASSING COLUMN

Bernhard Kuxdorf, Brühl; Kurt Wissel, Wesseling-Urfeld, and Karl Kaiser, Brühl, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 899,321, Apr. 24, 1978, abandoned. This application Aug. 9, 1979, Ser. No. 65,190
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1977, 2718857; Apr. 28, 1977, 2718858
Int. Cl.³ B01D 19/00, 3/22
U.S. Cl. 55—186 **6 Claims**



1. A degassing column for removing monomers from polymers present in dispersions comprising a tubular shell provided with a plurality of apertured plates, the apertures in said plates having a diameter of less than 5 mm, said plates being vertically spaced within said shell; a small gap uniform in width over the periphery being left between each plate and said shell; each of said plates being penetrated by at least one eccentrically arranged circular conduit comprising a draining chute in the upper portion thereof and an intake chute in the lower portion below the penetrated plate with a circular imperme-

able area on the plate situated below; each plate being supported by a plurality of ring segments and a plurality of wedge mountings, said wedge mountings and ring segments being level with respect to each other; said wedge mountings being fastened at equal distances around the inside of the shell, each of said wedge mountings comprising a flat profile structure in upright position in its middle portion with an upwardly extended projection formed with a slotted opening; each of said ring segments being fastened between two of said wedge mountings to the inside of the shell, said ring segments having a length necessary for them to provide a free peripheral gap between them with respect to said wedge mountings; and each plate being kept in horizontal position by wedges forced through the openings in the projections of each of said wedge mountings whereby minimal contacting surfaces and gassing from all sides are provided and formation of dead spaces, deposits of solids, adhesions of polymerides and clogging are avoided about the wedge mountings in the gap.

5. A degassing column for removing monomers from polymers present in dispersions comprising a tubular shell provided with a plurality of apertured plates, the apertures in said plates having a diameter of less than 5 mm, said plates being vertically spaced within said shell; a small gap uniform in width over its periphery being left between each plate and said shell; each of said plates being penetrated by at least one eccentrically arranged circular conduit comprising a draining chute in the upper portion thereof and an intake chute in the lower portion below the penetrated plate with a circular impermeable area on the plate situated below, a capping sleeve disposed over each draining chute; said capping sleeve comprising an upper portion and a lower portion securely connected to one another, said upper portion having a cross-section similar to that of the draining chute and said lower portion having a cross-section larger than that of said upper portion, the lower portion of said capping sleeve overlapping the upper portion thereof and being formed with a plurality of rectangularly shaped slots distributed around its periphery, said slots' lower portions being extended in axial direction of said capping sleeve and said slots' upper portions being extended transversely thereto whereby only one contacting surface is provided between the lower portion of the capping sleeve and the draining chute and whereby the possibility of having solids accumulate or polymerides adhere is considerably reduced; each draining chute being provided with number of screw-threaded bolts equal to the number of slots being formed in said capping sleeve, said bolts being secured in a radial orientation of the surface area of each draining chute so as to engage with said slots; and said capping sleeve being held in position by means of nuts screw-threadedly engaged on said bolts.

4,266,950

BUBBLING TYPE DISSOLVED GAS SEPARATOR

Yoshihiro Makino, and Toshihiko Yoshihara, both of Akoh, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 29, 1979, Ser. No. 53,520
Claims priority, application Japan, Jun. 30, 1978, 53-90576[U]
Int. Cl.³ B01D *19/00*
U.S. Cl. 55—196 **3 Claims**

1. A bubbling type dissolved gas separator for separating a dissolved gas in a liquid, comprising:

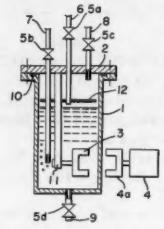
a closed vessel having a substantially horizontal bottom;

a baffle plate in said vessel for containing the agitation of said liquid;

a magnetic stirrer positioned in said vessel and rotatable about an axis parallel to the bottom of said vessel and closely adjacent the lower part of said vessel and a side wall of said vessel;

magnetic means outside of said vessel for rotating said stirrer about said axis; and

means for feeding a bubbling gas into said vessel, said means for feeding having a gas outlet adjacent said axis and adjacent the upstream side of said magnetic stirrer,



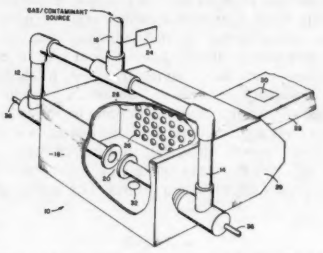
whereby said bubbled gas is sucked by the magnetic stirrer, thrown against said wall of said vessel and finely divided.

4,266,951

PARTICLE SCRUBBER AND RELATED METHOD

Seymour Calvert, San Diego, Calif., assignor to Air Pollution Technology, Inc., San Diego, Calif.

Continuation of Ser. No. 906,000, May 15, 1978, abandoned.
This application Mar. 5, 1979, Ser. No. 17,182
Int. Cl.³ B01D *53/14*
U.S. Cl. 55—84 **10 Claims**



1. A scrubber for removing finely-divided contaminants from a gas stream by inertial impaction comprising a housing forming an impaction chamber, a gas stream generating source, first and second conduits disposed in said chamber, each said conduit having an inlet and an outlet, means for directing said stream containing said finely divided contaminants from said gas stream generating source to each said conduit, substantially straight nozzle means disposed adjacent each said outlet and configured such that the flow path of the gas stream through said first conduit intersects the flow path of the gas stream through said second conduit, and outwardly extending flow guide flange members disposed on said first and second conduits adjacent each said nozzle means, wherein the cross-sectional area for flow between the flange members just after collision is from about 1 to 10 times the combined cross-sectional area of both said nozzle means, said flange members and said nozzle means thereby regulating the flow path of the gas stream as it is discharged from each conduit such that improved collection efficiency of the contaminants is achieved.

9. A method for removing various finely divide contaminants from a gas stream by inertial impaction and interception comprising the steps of:

(a) passing a first stream of gas containing said contaminants through a first conduit having a first discharge nozzle and an outwardly extending flow guide means adjacent one end thereof;

(b) providing said first stream of gas with finely divided liquid droplets such that said droplets are entrained by said first gas stream and are caused to accelerate and to impinge upon said contaminants in said first gas stream so

as to encourage the removal of said contaminants by inertial impaction;

(c) passing a second stream of gas containing said contaminants through a second conduit having a second discharge nozzle and an outwardly extending flow guide means disposed adjacent one end thereof;

(d) providing said second stream of gas with finely divided liquid droplets such that said droplets are entrained by said second gas stream and are caused to accelerate and to impinge upon said contaminants in said second gas stream so as to encourage removal of said contaminants by inertial impaction; and

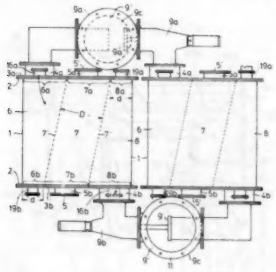
(e) controlling the direction and flow rates of said first gas stream through said first discharge nozzle and said second gas stream through said second discharge nozzle such that said streams are caused to intersect while maintaining a high relative velocity between the colliding streams, and to form a collision zone between said outwardly extending flow guide means, the cross-sectional area for flow between the outwardly extending flow guide means just after collision is from about 1 to 10 times the combined cross-sectional area of both nozzles, said outwardly extending flow guide means and said nozzles thereby regulating the flow path of the gas stream as it is discharged from each conduit such that improved collection efficiency of the contaminants is achieved.

4,266,952

APPARATUS OPERATING WITH AN ADSORBENT SUBSTANCE FOR PURIFYING AIR

Klaus Turek, Marsstrasse 52, 5620 Velbert, Fed. Rep. of Germany

Filed Dec. 17, 1976, Ser. No. 751,713
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—179 **17 Claims**



1. An apparatus operating with an adsorbent substance for purifying air or another gas laden with an adsorbate, comprising a tank having a gas inlet chamber, an adsorbent chamber and a gas outlet chamber in side-by-side juxtaposed relationship and extending from one end of the tank to the other, end face cover closures and a tank envelope enclosing the three chambers which consists of a plurality of sections connected at their end faces together by flanges, in at least one section of the tank envelope the connection zones for the inlet and outlet of gas and adsorbent substance being arranged at the end faces through apertures in inlet, outlet and adsorbent portions of said end faces comprising means defining said gas inlet, gas outlet and adsorbent chambers, respectively,

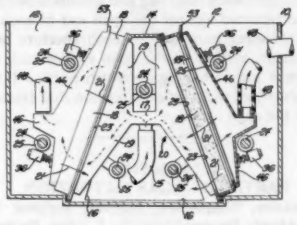
and first and second porous dividing means each extending between said end faces separating said gas inlet and gas outlet chambers respectively from said adsorbent chamber for confining said adsorbate in said adsorbent chamber while allowing gas to flow therethrough from said gas inlet chamber to said gas outlet chamber.

4,266,953

MECHANISM FOR REMOVING DUST PARTICLES FROM AN ENGINE AIR CLEANER

Bernard A. Matthys, Dakota; Donald W. Schoen, Ramsey, and Carl E. Anderson, Hennepin, all of Minn., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 2, 1980, Ser. No. 155,340
Int. Cl.³ B01D *46/04*
U.S. Cl. 55—294 **4 Claims**



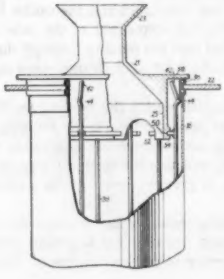
1. An engine air cleaner comprising downflow air passage box; means for supporting a rectilinear air filter panel in an inclined upright attitude in the box; means for periodically removing dust particle accumulations from the filter panel comprising an air nozzle located on the downstream face of the panel, said nozzle having a slot-type orifice for discharging pressurized air through the filter media to dislodge particulates embedded in the media; an air receiver located on the upstream face of the panel, said receiver having a slot-type orifice for capturing the pressurized air and entrained particulates after passage thereof through the media; means supporting the nozzle and receiver for linear travel across the filter panel, comprising first and second parallel ball screws extending transversely across the box, first and second ball nuts meshed with respective ones of the screws, a first flexible connection between the first nut and receiver, and a second flexible connection having swing flexibility in a plane normal to the ball screw axis, said second flexible connection having swing flexibility in a plane parallel to the ball screw axis.

4,266,954

HOLDER FOR BAG FILTER

Arthur A. Oare, and Harold J. Wonderling, both of Wellsville, N.Y., assignors to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed Jul. 12, 1979, Ser. No. 56,758
Int. Cl.³ B01D *46/02*
U.S. Cl. 55—341 R **1 Claim**



1. Apparatus for filtering solids from gas comprising a housing having an inlet for dust bearing carrier gas and an outlet for gas from which dust has been removed, a tube sheet with a

plurality of apertures therein extending across the housing intermediate the inlet and outlet to provide an inlet compartment for dirty gas and an outlet compartment for clean gas, a plurality of flexible bands, each of said bands having a groove in the outer surface thereof adapted to engage the periphery of an aperture of the tube sheet when the band is in an annular condition, a plurality of tubular filter bags depending from the tube sheet, each of said bags having an open end lying concentrically between one of the flexible bands and the periphery of one of the apertures in the tube sheet and a closed end extending into the inlet compartment for dirty gas, cage means adapted to support each filter bag and simultaneously bias each flexible band outward against the open end of each filter bag and the surrounding periphery of each aperture in the tube sheet, and means carried by the open end of each filter bag, said last named means having a venturi portion that extends above the tube sheet and a holding portion that extends into an open end of the cage means.

4,266,955

PARTICLE-IN-GAS FILTRATION

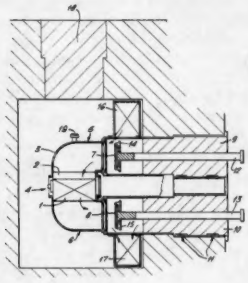
Stanley Hackney, Warrington, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed May 15, 1978, Ser. No. 906,201

Claims priority, application United Kingdom, May 31, 1977, 23034/77; Feb. 23, 1978, 7332/78

Int. Cl.[2] B01D *35/12*

U.S. Cl. 55—412 **8 Claims**



1. A filter assembly for particle in gas filtration comprising an inlet duct having an inlet opening and an outlet opening, an outlet duct having an inlet opening and an outlet opening,

a housing for filter means having an inlet housing opening and an outlet housing opening, said housing being removably placed between the outlet opening of the inlet duct and the inlet opening of the outlet duct with the inlet housing opening aligned with and connected to the outlet opening of the inlet duct and the outlet housing opening aligned with and connected to the inlet opening of the outlet duct so that gas passing through the filter assembly passes from the inlet duct to the outlet duct through the housing,

filter means located within the housing for filtering particles from the gas passing through the housing,

a first housing sealing member releasably received in the inlet housing opening for sealingly closing the inlet housing opening to prevent egress of the contents of the housing,

a second housing sealing member releasably received in the outlet housing opening for sealingly closing the outlet housing opening to prevent egress of the contents of the housing,

a first duct sealing member releasably received in the outlet opening of the inlet duct for sealingly closing the outlet opening,

a second duct sealing member releasably received in the inlet opening of the outlet duct for sealingly closing the inlet opening,

means on said first housing sealing member for engaging said first duct sealing member,

means on said second housing sealing member for engaging said second duct sealing member,

means for locating said first housing sealing member in the inlet housing opening and said first duct sealing member in the outlet opening of the inlet duct while the inlet housing opening is aligned with and connected to the outlet opening of the inlet duct,

means for locating said second housing sealing member in the outlet housing opening and said second duct sealing member in the inlet opening of the outlet duct while the outlet housing opening is aligned with and connected to the inlet opening of the outlet duct,

said first and second duct sealing members being engageable with said first and second housing sealing members respectively in such a way that the surfaces of the housing sealing members which are exposed to the surroundings when the housing sealing members are in place in the housing openings and the housing has been separated from the ducts and the surfaces of the duct sealing members which are exposed to the surroundings when the duct sealing members are in place in the duct opening and the housing has been separated from the ducts lie within the housing sealing members and duct sealing members, when the housing sealing members and duct sealing members are engaged, to minimize the exposure of said surfaces to the gas passing through the housing.

4,266,956

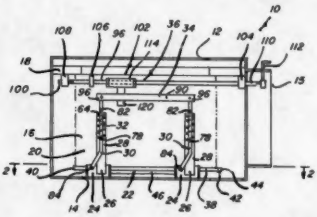
FILTER CLAMPING DEVICE

Alan Revell, Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed Dec. 26, 1979, Ser. No. 106,464

Int. Cl.[3] B01D *39/00*

U.S. Cl. 55—478 **10 Claims**



1. A unit filter clamping device for removably clamping a unit filter cell in position against a flow through unit filter seating structure located in a housing, the unit filter clamping device comprising:

a movable filter support tray for supporting the unit filter cell against the flow-through unit filter seating structure, the filter support tray being disposed a distance from the unit filter seating structure and movable toward and away from the unit filter seating structure;

at least one pair of opposing stationary support brackets being affixed in the housing, each stationary support bracket being located on opposite sides of the filter support tray from one another;

a rod spanning the distance between each pair of stationary support brackets, each rod being mounted to said pair of support brackets for translation in a direction transverse to its longitudinal axis toward and away from the unit filter seating structure;

means for mounting the unit filter support tray to each rod so that the unit filter support tray will move with each rod toward and away from the unit filter seating structure;

a pair of opposing actuating levers positioned with respect to each pair of stationary support brackets and disposed on opposite sides of the filter tray from one another, each actuating lever being pivotally attached at one of its ends to said pair of support brackets;

a pair of opposing follower levers positioned with respect to each pair of support brackets and disposed on opposite sides of the filter tray from one another, each of said follower levers being pivotally connected at one of its ends to the rod mounted to said pair of support brackets and being structurally positioned with respect to the actuating lever and pivotally attached to one of said support brackets on the same side of the filter tray so that the follower lever will pivot with the actuating lever;

means for pivotally moving each actuating lever selectively in either rotational direction about its point of pivotal attachment to said one of the support brackets; and,

means for moving each follower lever toward the unit filter seating structure as the actuating levers and connected follower levers rotate together about their respective pivot points in one direction thereby causing the filter support tray to move with the follower levers toward the unit filter sealing structure and clamping a unit filter cell supported on the filter support tray against the flow through unit filter seating structure.

4,266,957

RECOVERY OF HYDROGEN AND AMMONIA FROM PURGE GAS

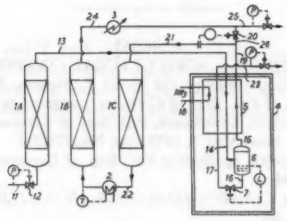
Wieslaw H. Isalski, Sale, England, assignor to Petrocarbon Development Limited, Manchester, England

Filed Aug. 13, 1979, Ser. No. 65,963

Claims priority, application United Kingdom, Jun. 7, 1979, 19927/79

Int. Cl.³ F25J *1/00*

U.S. Cl. 62—18 **15 Claims**



1. A method for treating a purge gas from an ammonia synthesis recycle stream to recover from said purge gas ammonia and hydrogen values for recycle to the ammonia synthesis reaction, the method comprising providing the purge gas at superatmospheric pressure, removing ammonia from the compressed purge gas by adsorption in an ammonia adsorber, cooling substantially ammonia-free compressed purge gas recovered from the adsorption step to sub-ambient temperature to partially condense it and recovering therefrom a hydrogen rich gas stream and a condensate stream both at superatmospheric pressure, providing refrigeration for the partial condensation by expanding the condensate and thereafter evaporating it in indirect heat exchange relationship with the purge gas to be cooled, and regenerating the ammonia adsorber by passing therethrough at elevated temperature a regenerating gas at superatmospheric pressure, which gas is provided from the hydrogen rich gas stream.

4,266,958

SIMULTANEOUS COOLING AND REMOVAL OF WATER FROM HYDROCARBON GAS MIXTURES

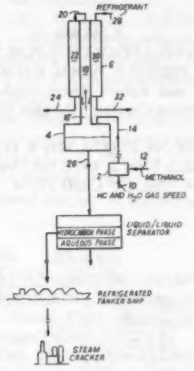
Donald R. Cummings, Cheltenham, England, assignor to Dut Pty Limited, Sydney, Australia

Filed Jul. 11, 1979, Ser. No. 56,724

Claims priority, application United Kingdom, Jul. 17, 1978, 30085/78

Int. Cl.³ F25J *1/02*

U.S. Cl. 62—20 **24 Claims**



1. A method of simultaneously dehydrating and chilling a gaseous composition comprising a water-containing gaseous hydrocarbon mixture and a controlled or known concentration of methanol vapour to a temperature which lies below the ice or hydrate formation temperature of said water-containing gaseous hydrocarbon mixture by passing it upwards in indirect heat exchange relationship with a coolant through a heat exchanger in which the composition is cooled and liquids therefrom flow downwards in a counter-current fashion in contact with the rising composition being cooled, the temperature of the rising composition and the down flowing condensed liquids in the exchanger decreasing from bottom to top of the heat exchanger, and recovering a dehydrated hydrocarbon gas from the top of the exchanger and an aqueous condensate from the bottom.

4,266,959

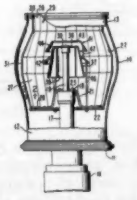
CRYOGENIC PUMP WITH RADIATION SHIELD

Kimo M. Welch, Mountain View, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Sep. 28, 1979, Ser. No. 79,860

Int. Cl.³ B01D *8/00*

U.S. Cl. 62—55.5 **15 Claims**



1. In a cryogenic pump for removing gaseous species from a chamber: means forming an inlet opening for gaseous commu-

nication with the chamber, a first stage extending axially from the inlet opening and having a pumping surface maintained at a first temperature for removing a portion of the gaseous species, a second stage having a pumping surface maintained at a temperature lower than the first temperature for removing an additional portion of the gaseous species, and a plurality of baffle members spaced axially apart between the first and second stages for shielding the pumping surface of the second stage from direct exposure to the inlet opening while permitting substantially unimpeded flow of the gaseous species from the inlet opening to the second stage.

4,266,960

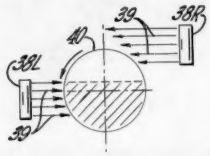
METHOD AND APPARATUS FOR PRODUCING FIBROUS WOOL PACKS

James W. Scott, and Robert Rising, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 575,870, May 9, 1975, abandoned. This application Mar. 2, 1977, Ser. No. 773,890

Int. Cl.³ C03D *37/04*

U.S. Cl. 65—4 R **9 Claims**



1. The method of recovering mineral fibers from a veil of mineral fibers comprising contacting said veil with simultaneously pulsating gaseous blasts from at least two nozzles to divide said veil into at least two principal fiber flows, and recovering said fibers.

4,266,961

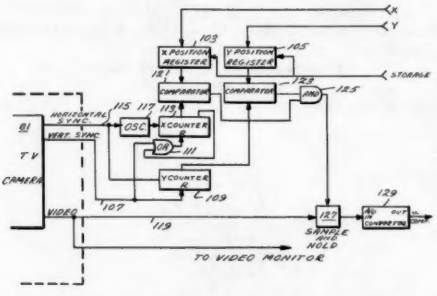
OVERRIDE SYSTEM FOR GLASS FORMING MACHINERY

Charles L. Wood, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.

Continuation of Ser. No. 898,213, Apr. 20, 1978, abandoned. This application Sep. 27, 1979, Ser. No. 79,368

Int. Cl.³ C03B *7/14, 9/40, 11/16*

U.S. Cl. 65—29 **25 Claims**



1. In a glassware forming machine having a plurality of sections, each of which includes a plurality of movable components which operate in timed relationship with respect to one another, a gob feeder for feeding gobs of molten glass from a predetermined location to each of said sections, said sections forming rigid glassware articles from the gobs taken from said gob feeder, wherein said movable components are each actuated at respective relative times in each of a plurality of machine cycles, a controller for said glassware forming machine comprising: timing means for generating a digital signal, said digital signal providing an indication of the time elapsed in each cycle of operation of said machine,

means responsive to said timing means for generating component operation commands for at least one movable component of a section during the machine cycle,

means for continuously monitoring the change in position of at least one of said components of said section of said glassware forming machine,

means responsive to said monitoring means for determining if said at least one monitored component is in the correct position during at least one portion of the cyclic operation of said section, and

means responsive to said determining means for inhibiting the operation of said machine if at least one of said monitored components is not in the correct position.

18. In a glassware forming machine having a plurality of sections each of which includes a plurality of movable components which operate in timed relationship with respect to one another, a gob feeder for feeding gobs of molten glass from a predetermined location to each of said sections, said sections forming rigid glassware articles from the gobs taken from said gob feeder, wherein said movable components are each actuated at respective relative times in each of a plurality of machine cycles, a method of controlling said glassware forming machine comprising the steps of:

generating a signal in synchronism with the machine cycle, said signal providing an indication of the elapsed time in each cycle of operation of said machine,

generating a component operation command for at least one movable component of a section at each of a plurality of times in the machine cycle,

continuously monitoring the position of at least one of said movable components of each section of said glassware forming machine,

determining in response to said monitoring step if at least one monitored component is in the incorrect position during at least one portion of the cyclic operation of said section of said machine, and

inhibiting the operation of said machine if at least one of said monitored components is not in the correct position.

4,266,962

DRIFT REDUCING AGRICULTURAL COMPOSITIONS

Elmar Kersting, Stolberg, and Heinz J. Niessen, Berg. Gladbach, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

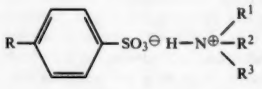
Filed May 7, 1975, Ser. No. 575,316

Claims priority, application Fed. Rep. of Germany, May 11, 1974, 2422954

Int. Cl.³ A01N *43/74, 37/10, 37/38, 57/28*

U.S. Cl. 71—90 **18 Claims**

1. Method of reducing the drift of sprayed agricultural chemical compositions which method comprises applying to an area of vegetation a crop protection composition containing an active crop protection agent and, as a foaming agent, an amine salt of a p-alkylbenzenesulfonic acid of the general formula.



(I)

in which

R is alkyl of from 8 to 16 carbon atoms.

R^1 and R^2 are individually selected from hydrogen, alkyl, or hydroxyalkyl of from 1 to 6 carbon atoms, and

R^3 is alkyl or hydroxyalkyl of from 1 to 6 carbon atoms.

4,266,963

PYRAZOLE DERIVATIVES, HERBICIDAL COMPOSITIONS CONTAINING THE SAME, AND A PROCESS FOR THE PREPARATION OF THE SAME

Ryuzo Nishiyama, Takatsuki; Fumio Kimura, Kusatsu; Takahiro Haga, Kusatsu; Nobuyuki Sakashita, Kusatsu, and Tetsuji Nishikawa, Kusatsu, all of Japan, assignors to Ishihara Sangyo Kaisha Ltd., Osaka, Japan

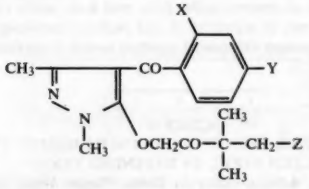
Filed Mar. 7, 1980, Ser. No. 128,060

Claims priority, application Japan, Mar. 7, 1979, 54-26564; Sep. 11, 1979, 54-116358

Int. Cl.[3] A01N *43/56;* C07D *231/20*

U.S. Cl. 71—92 16 Claims

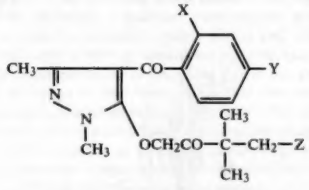
1. A pyrazole derivative having the formula (I):



(I)

wherein X and Y each represents a chlorine atom, a nitro group or a trifluoromethyl group, and Z represents a hydrogen atom or a halogen atom.

9. A herbicidal composition comprising a herbicidally effective amount of at least one compound having the formula (I):



(I)

wherein X and Y each represents a chlorine atom, a nitro group or a trifluoromethyl group, and Z represents a hydrogen atom or a halogen atom as an active ingredient, and agriculturally acceptable adjuvants not deleteriously affecting desired plants.

4,266,964

HERBICIDE ANTIDOTE COMPOUNDS AND METHOD OF USE

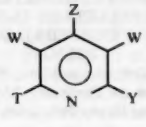
Theodore W. Holmsen, Clayton; Norman H. Kurihara, Walnut Creek, both of Calif., and Paul A. Thomas, Shawnee Mission, Kans., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 30, 1979, Ser. No. 34,891

Int. Cl.[3] A01N *25/32*

U.S. Cl. 71—94 28 Claims

1. A herbicidal composition comprising an active herbicide compound selected from the group consisting of the herbicidal S-alkyl dialkylthiocarbamates wherein alkyl contains 2 to about 6 carbons and is straight chained, branched or cyclic and 2-(2,2,2-trichloroethyl)-2-(3,5-dichlorophenyl)oxirane and a non-phytotoxic antidotally effective amount of a chlorpyridine compound having the formula:



wherein:

T is H, Cl, CCl_3, CH_2Cl or $CHCl_2$;

Y is H, NH_2, Cl, CCl_3, $CHCl_2$ or CH_2CHl;

Z is H, Cl, CCl_3, $-SO_2CH_3$ or morpholinyl;

each W is independently H or Cl; and

at least one of T, Y and Z is chloromethyl and at least one of T, W, Y and Z is Cl;

said chloropyridine compound being antidotally active with said herbicide compound and wherein said chloropyridine compound is present in an effective amount ranging between about 0.01 to about 4 parts by weight of the chloropyridine compound per part of herbicide compound.

4,266,965

2-(α-NAPHTHOXY)-N,N-DIETHYL PROPIONAMIDE AS AN AQUEOUS FLOWABLE CONCENTRATE

Richard W. Simons, Suisun, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Oct. 29, 1979, Ser. No. 89,070

Int. Cl.[3] A01N *37/18, 25/22*

U.S. Cl. 71—118 12 Claims

1. A flowable, storage-stable, aqueous pesticidal concentrate readily dilutable in water to form a spontaneous dispersion, which consists essentially of, by weight of the total concentrate,

(a) from 10 to 60% of 2-(α-naphthoxy)-N,N-diethyl propionamide;

(b) from 0.1 to 2.0% of a smectite clay;

(c) from 1.0 to 10.0% of a water-soluble nonionic surfactant;

(d) from 0.5 to 5.0% of a water-soluble dispersant; and

(e) from 1.0 to 20.0% of a water-soluble freezing point depressant;

the balance being water; the solid components having an average particle size of from about 5 to about 15 microns.

4,266,966

DUST TREATMENT

Harold T. Stirling, 39 Hoodridge Dr., Mount Lebanon, Pa. 15228

Filed Mar. 28, 1979, Ser. No. 24,658

Int. Cl.[3] C21B *1/04;* C22B *7/02*

U.S. Cl. 75—25 8 Claims

1. A process for converting waste dust from a refining process into valuable material suitable for recycling to a refining process comprising the steps of pelletizing said dust, heating the resulting pelletized dust in the presence of a material capable of reducing oxides without intermediate significant drying to a temperature between about 1900° and 2200° F. and at a rate sufficient to explode at least 10 percent of said pellets and thereby remove volatile impurities, and removing the resulting material from said chamber.

8. A process for converting waste dust from a basic oxygen steelmaking process into valuable material suitable for recycling to a refining process comprising the steps of pelletizing said dust, heating the resulting pelletized dust in the presence of a material capable of reducing oxides to a temperature between about 1900° and 2200° F. and at a rate sufficient to explode at least some of said pellets, removing a substantially zinc free sinter feed material of plus eight mesh and minus ¼" from said chamber, water quenching the sinter and recycling it to said steelmaking process.

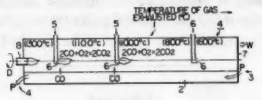
4,266,967
PROCESS FOR PRODUCING METALLIZED PELLETS FROM RAW PELLETS BY CONTROLLING DISTRIBUTION OF TEMPERATURE IN A ROTARY KILN

Yasuteru Yamada, Wakayama, and Kenji Kadota, Niihama, both of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka and Sumitomo Heavy Industries, Ltd., Tokyo, both of, Japan

Continuation of Ser. No. 830,215, Sep. 2, 1977, abandoned, which is a continuation of Ser. No. 662,278, Feb. 27, 1976, abandoned. This application Aug. 6, 1979, Ser. No. 64,001

Int. Cl.[3] C21B *13/08*

U.S. Cl. 75—36 4 Claims



1. A process for reducing raw pellets prepared from iron-containing dust exhausted from an iron plant to metallized pellets having high metallic iron content wherein the raw pellets containing metallic oxides and sufficient carbon to reduce said oxides are charged into a charge end of a rotary kiln and are heated therein, and wherein the metal oxides contained in the raw pellets are reduced by the carbon, which comprises introducing cooling water in a spray state into a portion of the interior of the rotary kiln which is in the first 3/7ths of the entire length of the kiln as measured from the charge end thereof and in which combustion does not occur, to lower the temperature of said portion and to reduce the rate of heating the raw pellets in the temperature range of from about 600° C. to about 800° C.

3. A process for reducing raw pellets prepared from iron-containing dust exhausted from an iron plant to metallized pellets having high metallic iron content wherein the raw pellets containing metallic oxides and sufficient carbon to reduce said oxides are charged into a charge end of a rotary kiln and are heated therein, and wherein the metal oxides contained in the raw pellets are reduced by the carbon, which comprise introducing cooling water in a spray state into a portion of the interior of the kiln which is in the first 3/7ths of the entire length of the kiln as measured from the charge end thereof and to lower the temperature of said portion and to reduce the heating rate of the raw pellets in the temperature range of from about 600° C. to about 800° C.

4,266,968
PROCESS FOR INJECTING BROWN COAL INTO A BLAST FURNACE

Heinz G. Daldrup, Kerpen-Sindorf; Günther Nothhelfer, Frechen; Friedrich H. Franke, Cologne, all of Fed. Rep. of Germany, and Raymond Limpach, Huncherange, Luxembourg, assignors to Rheinische Braunkohlenwerke A.G., Stüttgenweg, Fed. Rep. of Germany and Arbed S.A., Luxembourg

Filed Mar. 25, 1980, Ser. No. 133,555

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1979, 2912441

Int. Cl.[3] C21B *5/00*

U.S. Cl. 75—42 26 Claims

1. In a process for injecting fine-grain brown coal into a blast furnace through tuyere notches thereof, the improvement which provides that the initial speed at which the brown coal particles move after leaving a feed conduit therefor towards the center region of the hearth is substantially lower than the speed at which the hot blast passes into the tuyere notch.

4,266,969
DESULFURIZATION PROCESS

Peter J. M. Koros, Pittsburgh, Pa., assignor to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Filed Jan. 22, 1980, Ser. No. 114,262

Int. Cl.[3] C21C *7/02*

U.S. Cl. 75—58 7 Claims

1. A process for desulfurizing a bath of molten iron contained in a vessel comprising the steps of:

injecting particulate lime and a carbon-containing particulate with a non-oxidizing carrier gas beneath the surface of said bath to remove sulfur from said iron, while controlling the rate of injection of said carbon-containing particles to prevent substantial ejection to said bath from said vessel.

4,266,970
METHOD FOR BLOWING GAS FROM BELOW INTO MOLTEN STEEL IN REFINING VESSEL

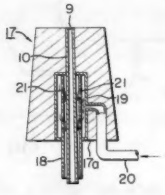
Shoji Iwaoka, Ashiya; Hiroyuki Kaito; Shigeo Anzai, both of Takarazuka; Susumu Ushigome, Nagoya; Yoshiaki Watanabe, and Nobuyuki Mimura, both of Tajimi, all of Japan, assignors to Kawasaki Steel Corporation, Kobe and Tokyo Yogyo Kabushiki Kaisha, Tokyo, both of, Japan

Filed Dec. 13, 1979, Ser. No. 103,177

Claims priority, application Japan, Dec. 21, 1978, 53-156869; Dec. 21, 1978, 53-156870; Dec. 21, 1978, 53-156871

Int. Cl.[3] C21C *5/34*

U.S. Cl. 75—59 5 Claims



1. A method for blowing gas from below into molten steel received in a refining vessel, which comprises:

using a refining vessel including at least one gas blowing aperture provided in the bottom wall thereof and a frusto-conical plug matching with said gas blowing aperture, releasably inserted into said gas blowing aperture from the outside of said bottom wall, which has a small-diameter bore having a diameter within the range of from 0.5 to 6.0 mm and a length within the range of from 60 to 700 mm;

closing the top end of said small-diameter bore of said plug opening into said vessel with a granular packing which is removable by the pressure of the gas blown, thereby ensuring prevention, during receiving a molten steel into said vessel, of said received molten steel from penetrating into said small-diameter bore;

blowing from below a gas having a pressure of over the static pressure of said molten steel through said small-diameter bore of said plug, after receiving said molten steel in said vessel, into said received molten steel, thereby instantaneously removing said granular packing to effect a prescribed gas blowing into said molten steel; and

after discontinuing said gas blowing, causing a portion of said molten steel in said vessel to penetrate by gravity into said small-diameter bore of said plug to solidify the molten steel in said small-diameter bore, thereby closing said

small-diameter bore to ensure prevention of said molten steel in said vessel from flowing out from said vessel.

4,266,971

CONTINUOUS PROCESS OF CONVERTING NON-FERROUS METAL SULFIDE CONCENTRATES

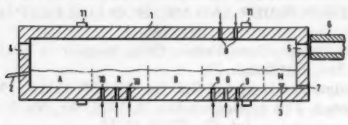
Werner Schwartz, Frankfurt am Main; Peter Fischer, Bad Vilbel, and Heinrich Traulsen, Schwalbach, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 23, 1979, Ser. No. 14,521

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1978, 2807964

Int. Cl.³ C22B *15/00*

U.S. Cl. 75—69 **10 Claims**



1. A continuous process for the conversion of a non-ferrous metal sulfide whereby to form:

(a) a slag phase and

(b) a non-ferrous metal phase of greater non-ferrous metal than the unconverted non-ferrous metal sulfide

which comprises feeding said non-ferrous metal sulfide onto a molten bath at a plurality of points along the length of a horizontal reactor into said horizontal reactor and heating the same therein, said horizontal reactor provided with an oxidizing zone to which an oxidizing gas is added wherein in said oxidizing zone oxidation conditions predominate and a reducing zone to which a reducing gas is added and wherein in said reducing zone reducing conditions predominate, while maintaining a concentration of oxidizing gas in the gas atmosphere which develops in the reactor such that the concentration of the oxidizing gas progressively decreases through said reducing zone to a minimum point where the slag phase is removed, stepwise introducing an oxidizing gas into the molten bath by passing the same oxidizing gas through nozzles disposed below the level of said molten bath, withdrawing said slag phase from one end of said horizontal reactor and said non-ferrous metal phase from the other end of the reactor, passing the gas atmosphere which develops in said reactor in a countercurrent direction to said slag phase and withdrawing exhaust gas from said reactor at the same end of said reactor as said non-ferrous metal phase is withdrawn.

4,266,972

PROCESS FOR NON-FERROUS METALS PRODUCTION FROM COMPLEX SULPHIDE ORES CONTAINING COPPER, LEAD, ZINC, SILVER AND/OR GOLD

Angel L. Redondo-Abad; Eduardo Diaz-Nogueira; Martin Gerez-Pascual, and Jose M. Regife-Vega, all of Madrid, Spain

Filed Dec. 14, 1979, Ser. No. 103,807

Claims priority, application Spain, Dec. 15, 1978, 476.055

Int. Cl.³ C22B *19/22, 15/08, 11/04, 13/04*

U.S. Cl. 75—101 R **16 Claims**

1. A process for non-ferrous metals production from complex sulphide ores containing copper, lead, of zinc, silver and/or gold which comprises: grinding said ore and subjecting it to a flotation operation for obtaining a bulk concentrate of the non-ferrous metals minerals and for separating most of the pyrite as a flotation tail, slurrying said concentrate in water in such a way as to obtain a predetermined solid-liquid ratio and subjecting said slurry to an oxidation leach in a stirred pressure reactor, at an oxygen partial pressure in the range of from about 5 to 15 Kg/cm^2g and a temperature in the range of from about 150° to 250° C. for complete oxidation of metal sulphides to sulphates, separating the reaction mixture into a solid residue containing ferric oxide, lead sulphate and precious metals, and a leaching liquor containing sulphuric acid, copper sulphate and zinc sulphate, neutralizing the free sulphuric acid contained in said leaching liquor with grounded limestone to a final pH in the range of from about 1.5 to 2.5. removing precipitated gypsum from solution, recovering copper by cementation or solvent extraction and electrowinning, leaching lead, silver and gold from the said solid residue by a strong chloride solution containing calcium chloride at a temperature in the range of about 60° to 90° C. at a pH in the range of from about 7.0 to 1.0 and in the presence of about 1 gram per liter of ferric chloride, recovering lead, silver and gold from the brine solution after solid removal by cementation with scrap zinc, mixing the lead free brine solution containing the zinc used in lead cementation with the zinc bearing solution from the copper recovery operation, and recovery zinc from the resulting solution by solvent extraction and electrowinning.

4,266,973

TARNISH-RESISTANT GOLD COLOR ALLOY AND DENTAL RESTORATIONS EMPLOYING SAME

Matthew M. Guzowski, Wallingford; Stephen P. Schaffer, Bloomfield, and David C. Wright, Enfield, all of Conn., assignors to The J. M. Ney Company, Bloomfield, Conn.

Filed Dec. 14, 1979, Ser. No. 103,846

Int. Cl.³ C22C *5/02, 5/06, 5/00*

U.S. Cl. 75—134 N **8 Claims**

1. A tarnish-resistant gold color alloy consisting essentially of:

A. 30–50 percent by weight gold;

B. 20–50 percent by weight copper;

C. 5–15 percent by weight silver;

D. 2–20 percent by weight zinc;

E. 1.5–15 percent by weight palladium;

F. up to 4.0 percent by weight platinum; and

G. up to 1.0 percent by weight rhenium;

the copper to silver atomic ratio being 6–8:1; the copper to zinc atomic ratio being 2–12:1; and the copper to palladium atomic ratio being 5–30:1; the weight ratio of copper to silver being 3.5–4.7:1; the weight ratio of copper to zinc being 3.0–18:1; and the weight ratio of copper to palladium being 1.95–11.66:1.

4,266,974

ALLOY STEEL POWDER HAVING EXCELLENT COMPRESSIBILITY, MOLDABILITY AND HEAT-TREATMENT PROPERTY

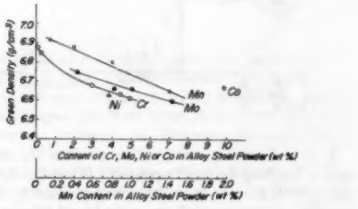
Minoru Nitta; Yoshihiro Kajinaga, both of Chiba; Ichio Sakurada, Ichihara; Kuniaki Ogura, and Shunji Ito, both of Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Oct. 26, 1979, Ser. No. 88,539

Claims priority, application Japan, Oct. 30, 1978, 53/133565

Int. Cl.³ B22F *1/00*

U.S. Cl. 75—251 **2 Claims**



1. An alloy steel powder having excellent compressibility, moldability and heat-treatment property, consisting of not more than 0.05% by weight of carbon, not more than 0.0040% by weight of nitrogen, not more than 0.10% by weight of

silicon, not more than 0.01% by weight of aluminum, not more than 0.25% by weight of oxygen, at least one of 0.35–1.50% by weight of manganese, 0.2–5.0% by weight of chromium, 0.1–7.0% by weight of molybdenum and 0.01–1.0% by weight of vanadium, and the remainder being iron and incidental impurities, and having a green density of at least 6.60 g/cm^3 and a rattler value of not higher than 1.20% in the green compact produced therefrom under a molding pressure of 5 ton/cm^2.

2. An alloy steel powder having excellent compressibility, moldability and heat-treatment property, consisting of not more than 0.05% by weight of carbon, not more than 0.0040% by weight of nitrogen, not more than 0.10% by weight of silicon, not more than 0.01% by weight of aluminum, not more than 0.25% by weight of oxygen, at least one of 0.35–1.50% by weight of manganese, 0.2–5.0% by weight of chromium, 0.1–7.0% by weight of molybdenum and 0.01–1.0% by weight of vanadium, at least one of not more than 0.02% by weight of boron, 0.2–5.0% by weight of nickel, 0.2–2.0% by weight of copper, 0.2–10.0% by weight of cobalt and not more than 0.10% by weight of niobium, and the remainder being iron and incidental impurities, and having a green density of at least 6.60 g/cm^3 and a rattler value of not higher than 1.20% in the green compact produced therefrom under a molding pressure of 5 ton/cm^2.

4,266,975
ANTICORROSIVE COATING COMPOSITION

Takao Higashiyama, and Toshio Nishikawa, both of Yokohama, Japan, assignors to Diamond Shamrock Corporation, Dallas, Tex.

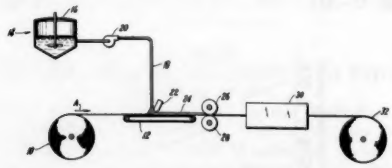
Filed Apr. 3, 1980, Ser. No. 136,943
Claims priority, application Japan, Apr. 6, 1979, 54-41052
Int. Cl.^{3} C09D *5/10*; 148 *6.2*
U.S. Cl. 106—1.12 **16 Claims**

1. In a substantially resin-free aqueous coating composition for application to metal substrates, comprising a chromic acid constituent, particulate metal and at least one high-boiling organic oxohydroxy liquid having a molecular weight of 300 or less; the improvement comprising a boric acid component in an amount of 5 to 95% by weight of the chromic acid constituent and boric acid component.

4,266,976
FABRIC TREATING COMPOSITIONS

Razmic S. Gregorian, Aiken, and Chettoor G. Namboodri, North Augusta, both of S.C., assignors to United Merchants and Manufacturers, Inc., New York, N.Y.

Continuation of Ser. No. 794,627, May 6, 1977, abandoned, which is a division of Ser. No. 584,389, Jun. 6, 1975, Pat. No. 4,118,526. This application Feb. 26, 1979, Ser. No. 15,030
Int. Cl.^{3} C09K *3/18*
U.S. Cl. 106—2 **14 Claims**



1. In a foamable composition suitable for treating fabrics with a finishing agent comprising a fabric finishing agent in an amount effective to impart the properties of the finishing agent to a fabric, a foam stabilizer, and a liquid diluent; the improvement comprising about 0.5 to 8 percent foam stabilizer and in an amount sufficient to form said composition into a stable foam having a blow ratio in the range from about 2:1 to 20:1, a foam density in the range from about 0.5 gm/cc to 0.05 gm/cc, and which is sufficiently stable to substantially retain its characteristics during application until a mechanical force is applied thereto.

6. In a stable foamed composition suitable for continuously treating fabrics with a finishing agent comprising a fabric finishing agent in an amount effective to impart the properties of the finishing agent to a fabric, a foam stabilizer and a liquid diluent; the improvement comprising about 0.5 to 8 percent foam stabilizer and in an amount sufficient to form a stable foam having a flow ratio in the range from about 2:1 to 20:1, a foam density in the range from about 0.5 gm/cc to 0.05 gm/cc, and which is sufficiently stable so that upon application onto a fabric said foam composition will flow on the fabric surface and not break down until a mechanical force is applied thereto.

4,266,977
SUBMICRON CARBON-CONTAINING TITANIUM BORIDE POWDER AND METHOD FOR PREPARING SAME

Roger A. Steiger, Canal Fulton, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

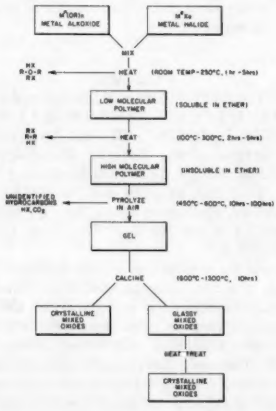
Continuation-in-part of Ser. No. 546,835, Feb. 3, 1975, abandoned. This application Dec. 4, 1978, Ser. No. 966,526
Int. Cl.^{3} C04B *35/58*
U.S. Cl. 106—43 **28 Claims**

1. Submicron titanium diboride powder having dispersed therein solid submicron carbon-containing additive selected from the group elemental carbon, titanium carbide and mixtures of elemental carbon and titanium carbide, the total carbon content of said additive being from about 0.3 to about 2 weight percent based on titanium diboride, and wherein the titanium diboride powder has a surface area of between about 3 and 15 square meters per gram and the nominal sectional diameter of at least 90 percent of the titanium diboride particles of the powder are less than one micron, said particles being tabular to equidimensional hexagonal crystals having well developed faces, the number median particle size of said particles being between 0.08 and 0.6 microns.

4,266,978
SYNTHESIS OF MIXED OXIDE COMPOSITION

Svante Prochazka, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 25, 1979, Ser. No. 51,695
Int. Cl.^{3} B01J *13/00*; C03C *3/04, 3/12, 3/22*; C04B *35/18, 35/44, 35/48*
U.S. Cl. 106—39.5 **21 Claims**



1. A process for producing a solid amorphous precursor gel composed of at least two metal oxides, said solid gel being free of water and hydroxyl groups and having a specific surface

area higher than 10 square meters per gram, consisting essentially of reacting under reflux conditions in a substantially moisture-free atmosphere a mixture of metal alkoxide and metal halide at a temperature ranging from about room temperature up to about 250° C. at a pressure ranging from atmospheric pressure to superatmospheric pressure ranging up to about 10 atmospheres forming a polymeric reaction product, said metal alkoxide being $M^n(OR)_n$ where M^n is metal ion, R is an alkyl radical, and n is the valence of M^n, said metal halide being M^eX_e where M^e is metal ion different from M^n, X is a halide selected from the group consisting of chloride, bromide, iodide and fluoride, and e is the valence of M^e, heating said polymeric reaction product in a substantially moisture-free atmosphere at a temperature ranging from about 100° C. up to about 300° C. producing a polymeric product insoluble in ethyl ether at room temperature, pyrolyzing said ether-insoluble polymeric product in air or oxygen at a temperature ranging from about 450° C. to about 600° C. producing said gel comprised of a submicroscopically homogeneous mixture of the oxides of M^n and M^e and up to about 0.02% by weight of elemental carbon based on the total weight of said gel.

6. A solid amorphous precursor gel free of water and hydroxyl groups and having a specific surface area higher than 10 square meters per gram, said gel consisting essentially of a submicroscopically homogeneous mixture of at least two metal oxides and up to about 0.02% by weight of elemental carbon based on the total weight of said gel, said gel having interconnecting pores open to the surface.

12. A polycrystalline ceramic body produced by sintering the gel of claim **6** and having a density ranging from about 70% to about 100%.

21. An impermeable glassy submicroscopically homogeneous mixture of oxides of aluminum and silicon corresponding to about $3Al_2O_3 \cdot 2SiO_2$ and up to about 0.02% by weight of elemental carbon based on the total weight of said glassy mixture, said glassy mixture being free of water and hydroxyl groups.

4,266,979

OXYGEN SENSOR CERAMIC AND PROCESS FOR PREPARING THE SAME

Tadahiko Miyoshi, and Takeo Yamazaki, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 1, 1979, Ser. No. 80,469

Claims priority, application Japan, Sep. 29, 1978, 53/119312

Int. Cl.³ C04B *35/48;* **C01N** *27/58*

U.S. Cl. 106—57 **8 Claims**

1. An oxygen sensor ceramic of a solid electolyte of a zirconia-yttria system, which comprises aggregates of cubic zirconia grains having an average grain size of 2–10 μm and monoclinic zirconia grains having an average grain size of 0.2–1 μm, the aggregates of said cubic zirconia grains being in contact with one another, and said monoclinic zirconia grains being distributed as aggregates in clearances among the aggregates of the cubic zirconia grains.

4,266,980

EXPANSIVE SOLIDIFYING MATERIAL

Akira Chudo, Sakai; Tomomitsu Sugi, Ashiya, and Ko[illegible] Kataoka, Osaka, all of Japan, assignors to Osaka Cement Co., Ltd., Osaka, Japan

Filed Sep. 7, 1979, Ser. No. 73,305

Claims priority, application Japan, Sep. 21, 1978, 53-115134

Int. Cl.³ C04B *7/02*

U.S. Cl. 106—97 **2 Claims**

1. An expansive solidifying material comprising:

15 to 40% by weight of gypsum;

25 to 40% by weight of blast furnace slag;

30 to 50% by weight of Portland cement; and not more than 10% by weight of a soluble aluminate selected from the group consisting of aluminous cement, aluminum sludge obtained in the remelting of aluminum material, burnt alunite, alumite sludge and red muddy slag occurring in the melting process of bauxite.

4,266,981

PROCESS FOR RECOVERING AND UTILIZING CELLULOSE USING SULFURIC ACID

George T. Tsao, and Terry Y. Chou, both of West Lafayette, Ind., assignors to Purdue Research Corporation, West Lafayette, Ind.

Filed Oct. 3, 1979, Ser. No. 81,538

Int. Cl.³ C13K *1/02*

U.S. Cl. 127—37 **19 Claims**

1. A process for recovering cellulose from a cellulosic material which contains hemicellulose, cellulose and lignin, which comprises the steps of: contacting the cellulosic material with dilute acid under mild conditions to hydrolyze only the hemicellulose portion thereof;

removing the hydrolyzed hemicellulose portion from the remainder of the cellulosic material residue, said residue being in solid form;

blending and mixing said residue with concentrated sulfuric acid under mild conditions to dissolve and partially hydrolyze the cellulose portion of said residue, the lignin portion being substantially unaffected by the mild reaction conditions and remaining as a solid; and

reprecipitating the dissolved and partially hydrolyzed cellulose by adding a reprecipitating agent to the reaction mass resulting from said blending and mixing step, said reprecipitating agent being a member selected from the group consisting of water, water soluble organic solvents and mixtures thereof.

11. The process of claim **1** wherein said reprecipitated cellulose has a lowered DP and has its internal structure and lignin seal disrupted whereby said cellulose may be readily substantially completely hydrolyzed to yield glucose.

12. The process of claim **11** further comprising the step of hydrolyzing said reprecipitated cellulose to glucose by means of cellulase enzymes or a dilute acid or a mixture of a dilute acid and enzymes.

4,266,982

METHOD AND APPARATUS FOR CLEANING A MATRIX OF A WET MAGNETIC SEPARATOR

Hans Bender, Leverkusen; Rupprecht Graf; Karl-Heinz Unkelbach, both of Cologne, and Wolf Zabel, Seelscheid, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Jul. 18, 1979, Ser. No. 12,393

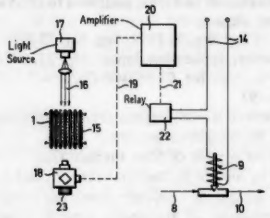
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1978, 2806340

Int. Cl.³ B08B *7/00*

U.S. Cl. 134—18 **9 Claims**

1. In a method for cleansing a matrix of a wet magnetic separator loaded with adherent magnetic material wherein the matrix is cleaned with a liquid medium and a compressible gas,

the improvement comprising the steps of measuring the extent of loading of the magnetic material and initiating the cleaning



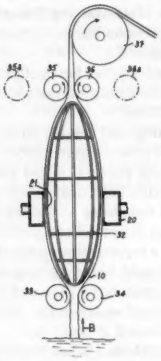
with the compressible gas upon exceeding a given threshold value of loading.

4,266,983

METHOD OF, AND MEANS FOR, REDUCING THE LIQUID CONTENT OF AIR-PERMEABLE MATERIAL IN TUBULAR FORM

Akos Laszlo, Nottingham, and Horace B. Merriman, South Ascot, both of England, assignors to Courtaulds Limited, London, England

Filed Mar. 12, 1979, Ser. No. 19,629
Int. Cl.³ B08B *5/04*
U.S. Cl. 134—21 **13 Claims**



1. A method of reducing the liquid content of air-permeable material in tubular form, said method comprising the steps of:

(a) moving the tube of material longitudinally through structure defining a surface surrounding the tube, and formed with elongated apertures inclined at a slight angle to the direction of the longitudinal axis of the tube,

(b) applying forces to said tube to maintain it in open form and applied closely to said apertured surface,

(c) applying suction to said apertures of create a gas current from within said tube out through said apertures.

3. Apparatus for reducing the liquid content of air-permeable material in tubular form, said apparatus comprising:

(a) at least one hollow member defining a frame to surround the tube of material and presenting an inwardly-facing surface thereto,

(b) said surface being formed with elongated apertures inclined at a slight angle to the longitudinal direction of a tube of material passing through said frame,

(c) said apertures communicating with the interior of said at least one hollow member,

(d) means for creating a sub-atmospheric pressure within said at least one hollow member,

(e) means for advancing the tube of material through the frame to move the external surface of the tube past said inwardly-facing, apertured surface,

(f) means for maintaining said tube in open form and applied closely to said surface,

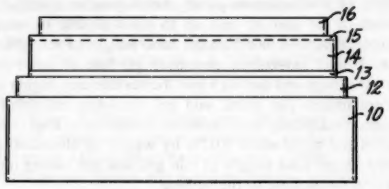
(g) whereby said suction will create a gas current from within and substantially only from within said tube into said at least one hollow member.

4,266,984

ENHANCED OPEN CIRCUIT VOLTAGE IN AMORPHOUS SILICON PHOTOVOLTAIC DEVICES

Christopher R. Wronski, Princeton, and Bruce P. Myers, Garwood, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Dec. 3, 1979, Ser. No. 99,421
Int. Cl.³ H01L *31/04*
U.S. Cl. 136—255 **8 Claims**



1. An enhanced voltage photovoltaic device having a body of amorphous silicon produced by the process comprising:

depositing a layer of photoconductive amorphous silicon onto a substrate;

exposing a surface of said amorphous silicon layer to a gas containing a partial pressure of sulfur dioxide at a temperature ranging from between 23° C. and 300° C.;

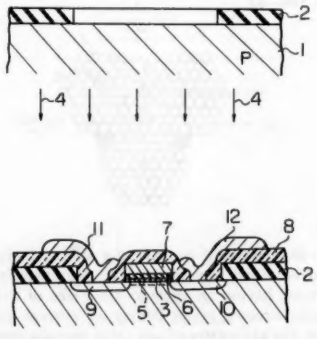
forming a diode junction to said exposed surface.

4,266,985

PROCESS FOR PRODUCING A SEMICONDUCTOR DEVICE INCLUDING AN ION IMPLANTATION STEP IN COMBINATION WITH DIRECT THERMAL NITRIDATION OF THE SILICON SUBSTRATE

Takashi Ito, Kawasaki, and Shinpei Hijiya, Sagamihara, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 18, 1979, Ser. No. 40,407
Int. Cl.³ H01L *21/265, 21/31*
U.S. Cl. 148—1.5 **16 Claims**



1. A process for producing a semiconductor device comprising the steps of:

forming a silicon nitride film by direct thermal nitridation of the silicon of a semiconductor silicon substrate;

implanting impurity ions into said semiconductor silicon substrate, and;

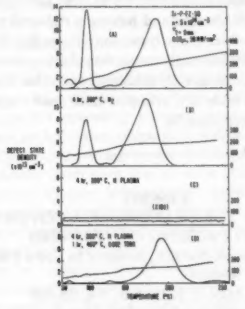
heating said semiconductor substrate to a temperature for electrically activating said impurities and for correcting damage to said semiconductor substrate caused by the ion implantation, while maintaining essentially the entire amount of the ion implanted impurities at the surface of said semiconductor silicon substrate.

4,266,986

PASSIVATION OF DEFECTS IN LASER ANNEALED SEMICONDUCTORS

Janet L. Benton, Warren; Charles J. Doherty; Lionel C. Kimerling, both of Westfield, and Harry J. Leamy, Summit, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 29, 1979, Ser. No. 98,398
Int. Cl.[3] H01L *21/265*
U.S. Cl. 148—1.5 **3 Claims**



1. A method for processing a semiconductor comprising exposing at least a portion of the semiconductor to laser or electron radiation sufficient to heat the portion to within 200 degrees C. of the melting point, quenching the heated portion, and exposing the quenched portion to atomic hydrogen thereby passivating a substantial number of the defects.

4,266,987

PROCESS FOR PROVIDING ACID-RESISTANT OXIDE LAYERS ON ALLOYS

Chih-Chung Wang, Lexington, Mass., assignor to Kennecott Copper Corporation, New York, N.Y.

Filed Apr. 25, 1977, Ser. No. 790,498
Int. Cl.[3] C23C *11/00*
U.S. Cl. 148—6.3 **2 Claims**

1. A process for providing a stable, acid-resistant coating on the surface of a titanium alloy containing aluminum, said process comprising the steps of:

providing a clean surface on the alloy;

exposing the clean surface to an environment containing oxygen which is oxidizing with respect to aluminum and reducing with respect to the titanium constituents of said alloy; and

maintaining the environment at a selected temperature for a sufficient amount of time to form an aluminum oxide coating on the surface and reduce the titanium to form an acid-resistant coating of the alloy.

4,266,988

COMPOSITION AND PROCESS FOR INHIBITING CORROSION OF FERROUS OR NON-FERROUS METAL SURFACED ARTICLES AND PROVIDING RECEPTIVE SURFACE FOR SYNTHETIC RESIN COATING COMPOSITIONS

William D. Krippes, Schaumburg, Ill., assignor to J. M. Eltzroth & Associates, Inc., Schaumburg, Ill.

Filed Mar. 25, 1980, Ser. No. 133,955
Int. Cl.[3] C23F *7/26*
U.S. Cl. 148—6.21 **23 Claims**

1. A chromate depositing composition having a solids content within the range from 0.2 gram per liter to 75.0 grams per liter, the remainder being water, and consisting essentially of the following:

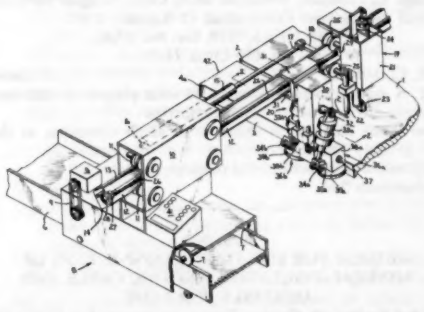
Ingredients	Grams per Liter
Chromic acid (CrO_3), (expressed as Cr)	0.10–50.0
Hydrofluoric acid (H_2F_2) (expressed as F)	0.01–5.0
Fluoboric acid (HBF_4) (expressed as BF_4)	0.01–50.0
Sulfuric acid (H_2SO_4) (expressed as SO_4)	0.01–5.0
Hydrofluosilicic acid (H_2SiF_6) (expressed as SiF_6)	0.0–5.0
Additive from the group consisting of: zinc oxide, magnesium oxide, magnesium hydroxide, aluminum sulfate, aluminum hydroxide and mixtures thereof	0.01–saturation solubility at 22° C.

4,266,989

CUTTING TOOL GUIDING SYSTEM FOR METAL CUTTING MACHINES

Robert G. Ludwigson, Brookfield, Wis., assignor to C-R-O, Inc., Menomonee Falls, Wis.

Filed Oct. 30, 1979, Ser. No. 89,405
Int. Cl.[3] B23K *7/00*
U.S. Cl. 148—9 R **5 Claims**



1. For use in a machine for cutting a seam in a metal workpiece with a longitudinally movable cutting tool, apparatus comprising:

(a) tool guide means connected for longitudinal movement with said cutting tool and adapted to followingly contact the exposed longitudinal edge of the workpiece,

(b) said tool guide means including selectively actuatable means to cause bypass of said contact with any deformed corners associated with said workpiece edge while maintaining guiding contact with said edge remote from said corners.

5. The method of guiding a cutting tool in the formation of

a longitudinal seam in a metal workpiece having a longitudinal edge with a starting corner comprising:

(a) providing leading and trailing guide members operatively connected to said cutting tool and which are longitudinally spaced on either side of a transverse plane containing said tool,

(b) positioning said tool adjacent said workpiece,

(c) advancing said leading guide member transversely into engagement with said workpiece edge downside and remote from said starting corner,

(d) retracting said trailing guide member transversely away from the workpiece,

(e) moving said tool and guide members longitudinally along the workpiece,

(f) and subsequently advancing said trailing guide member into work-engaging position, and retracting said leading guide member.

4,266,990

PROCESS FOR DIFFUSION OF ALUMINUM INTO A SEMICONDUCTOR

Naohiro Momma, Hitachi, and Hiroyuki Taniguchi, Kodaira, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 25, 1979, Ser. No. 88,136

Int. Cl.³ H01L *21/223*

U.S. Cl. 148—189 **10 Claims**

1. A process for the diffusion of aluminum into a semiconductor comprising, in combination, the steps of:

(a) subjecting a semiconductor substrate, made of a material selected from the group consisting of silicon and germanium, to a first heat treatment under vacuum to diffuse aluminum thereinto from an aluminum diffusion source carried by a holding means of a refractory metal disposed within an evacuated sealed tube; and

(b) subjecting said semiconductor substrate to a second heat treatment in an atmosphere selected from the group consisting of oxygen and nitrogen at a temperature higher than that applied in said first step, whereby aluminum diffusion is achieved while substantially preventing reduction in the lifetime of minority carriers in the semiconductor substrate.

4,266,991

CHLORINEFLUORIDE SOLID GAS GENERATOR

Joseph E. Flanagan, Woodland Hills, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 13, 1979, Ser. No. 57,463

Int. Cl.³ C06B *33/06*

U.S. Cl. 149—42 **5 Claims**

1. A stoichiometrically-balanced solid propellant chlorinefluoride gas generator, which comprises:

an alkali chloride or mixtures of alkali chlorides, as the primary source of chlorine;

potassium fluorochlorinate oxidizer; and

aluminum fuel.

4,266,992

METHOD FOR END TO END CONNECTION OF MINERAL-INSULATED ELECTRIC CABLE AND ASSEMBLY FOR SAME

Michel Agaisse, St. Gratien, France, assignor to Les Cables De Lyon, Lyon Cedex, France

Filed Sep. 11, 1978, Ser. No. 941,354

Claims priority, application France, Sep. 30, 1977, 77 29456

Int. Cl.³ B21F *15/06*; H02G *15/18*

U.S. Cl. 156—49 **9 Claims**

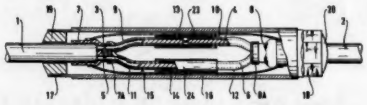
1. A method of end-to-end connection of single- or multiconductor electric cables having at least one electrical conductor, a conductive metal sheath and compressed mineral insulation within said conductive metal sheath and between said sheath and said at least one conductor, said method comprising the steps of:

removing the conductive metal sheath and the mineral insulation which surrounds the conductor at the ends of the cables to be connected,

fitting a metal conductor connection sleeve onto opposed ends of each pair of corresponding conductors of respective cable ends,

crimping said metal conductor connection sleeve onto the ends of said pair of conductors,

fitting a ring made of the same metal as that of the sheaths on each of the cable ends;



fitting a cap made of a flexible heat-resistant material onto the end of each cable and internally of said ring, and

positioning a cylindrical metal connection sleeve having an appreciably greater inside diameter than the outside diameter of the cable sheaths and having a reduced wall thickness at each of its ends onto said rings for fitting and crimping said cylindrical connection sleeve onto said rings at its ends of reduced wall thickness such that the reduced wall thickness ends are crimped onto said rings and the ends of the cable sheaths.

4,266,993

METHOD FOR THE SEALING OF A COVER STRIP ONTO PACKING CONTAINERS

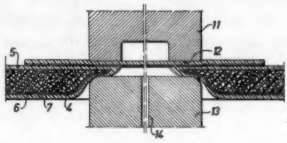
Jan-Erik Olsen, Malmö, Sweden, assignor to Tetra Pak International AB, Lund, Sweden

Filed May 2, 1979, Ser. No. 35,348

Claims priority, application Sweden, May 2, 1978, 7805004

Int. Cl.³ B29C *27/02*; B65B *61/18*

U.S. Cl. 156—69 **5 Claims**



1. A method for sealing a cover strip over an opening in a packing container wall, said wall including at least a central layer arranged between first and second thermoplastic layers, and said central layer including a surface defining an outer boundary of said opening, which surface includes edges and cavities where bacteria may breed, comprising the steps of:

placing said cover strip over said opening in said packing container wall, in contact with said first thermoplastic layer;

heating said packing container wall about said opening until said thermoplastic layers are at a softening temperature;

compressing said packing container wall about said opening simultaneously with the heating step;

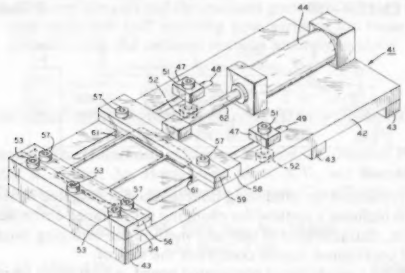
urging said second thermoplastic layer of said packing container wall at said opening toward said first thermoplastic layer until said second thermoplastic layer is joined both to said first thermoplastic layer and to the cover strip and said surface of said central layer is entirely covered by at least said second thermoplastic layer.

4,266,994

METHODS FOR MAKING DYNAMOELECTRIC MACHINE PHASE INSULATORS

Richard D. Burns, Holland, Mich., assignor to General Electric Company, Fort Wayne, Ind.

Filed Feb. 1, 1979, Ser. No. 8,603
Int. Cl.³ B29C *17/02, 17/10;* **B32B** *31/16*
U.S. Cl. 156—73.2 **27 Claims**



1. A method of making a phase insulator for a dynamoelectric machine of a predetermined stack height, the method comprising the steps of severing a phase insulator from a sheet of insulating material having a preselected thickness and thereby forming an individual phase insulator having first and second spaced apart planar portions interconnected by at least one connector extending therebetween, with the planar portions and at least one connector initially having a thickness generally corresponding to the predetermined thickness; and subsequently stretching the at least one connector so as to increase the spacing between the planar portions thereby to produce a phase insulator of a size other than the size of the phase insulator as originally severed and of a size sufficient to accommodate subsequent relaxation of the connector, whereby an initially severed phase insulator may be used with stator cores of various stack heights.

27. A method of making phase insulators for a dynamoelectric machine, the method comprising the steps of elongating longitudinally extending filamentary material segments a predetermined amount corresponding to a preselected stator core stack height by subjecting such segments to a tensile stress of at least about 36,000 psi but less than about 67,000 psi, and thereby elongating such material into straightened segments, and joining together first and second planar insulation pieces with such elongated segments.

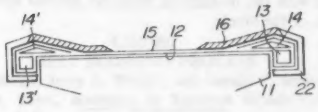
4,266,995

LIGHT WEIGHT PNEUMATIC TIRE HAVING A THIN SIDE WALL RUBBER

Yoichi Kitazawa, Kodaira; Takeshi Sato, Higashi-Yamato, and Hisao Tsuji, Akigawa, all of Japan, assignors to Bridgestone Tire Company Limited, Kyobashi, Japan

Continuation of Ser. No. 883,984, Mar. 6, 1978, abandoned, which is a division of Ser. No. 720,294, Sep. 3, 1976, Pat. No. 4,096,899. This application Jul. 13, 1979, Ser. No. 57,476
Claims priority, application Japan, Sep. 18, 1975, 50/112066
Int. Cl.³ B29H *17/14, 17/22*
U.S. Cl. 156—123 R **6 Claims**

1. A method of producing a light weight pneumatic tire having a thin sidewall rubber, comprising: initially squeezing a thin sidewall rubber layer only onto opposite outer sidewall portions of an upper ply layer consisting of cord strips by means of calender rolls, said thin sidewall rubber layer having a thickness of 0.5 mm to 2.0 mm and a Shore A hardness after vulcanization of 40° to 55°, and thereafter forming the tire by winding at least one carcass ply layer having a width substantially corresponding to a distance between a pair of bead cores around a cylindrical former, positioning a pair of bead cores on said at least one carcass ply layer at axially opposite end portions of said former, superimposing said upper ply layer with the thin sidewall rubber layer squeezed thereon by calender



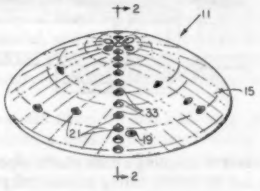
rolls about regions extending from said bead cores to at least crown edges of the tire to cover said regions with said thin sidewall rubber layer on said former, and vulcanizing the thus assembled layers.

4,266,996

METHOD AND TOOL FOR PRODUCING CENTERED PARTS HAVING SPHERICAL SURFACES

Reinhold F. Garbe, Mountain View; Leo A. Esterl, Sunnyvale, and Ronald E. Koltun, Colfax, all of Calif., assignors to Spectra-Physics, Inc., Mountain View, Calif.

Filed Jan. 25, 1980, Ser. No. 115,204
Int. Cl.³ B32B *31/16;* **B24B** *1/00;* **B29D** *11/00*
U.S. Cl. 156—154 **14 Claims**



1. A method of producing parts having centered spherical surfaces, said method comprising,

generating a very accurate spherical surface on a block,

attaching a shell to said surface on the block,

drilling an opening through the shell to expose a spherical shaped seating surface on the block,

putting an adhesive into the opening,

placing a part in the opening with an inner end of the part engaged with the spherical shaped seating surface on the block and with the sides of the part located and supported by the sidewall surfaces of the opening and said adhesive, and

grinding a spherical surface on the outer end of the part concentric with the underlying precisely formed spherical surface of the block.

8. A tool for holding a part during the grinding on the part or the grinding and polishing on the part of a spherical surface having a center of curvature which defines an optical axis of the part that lies in close coincidence with the mechanical axis of the part, said tool comprising,

spherical support means for supporting the part against longitudinal movement of the part during grinding and polishing of the spherical surface,

lateral support means for supporting the part against lateral movement of the part during grinding and polishing of the spherical surface,

said spherical support means comprising a block having an outer, accurately generated spherical surface engagable with a surface of the part on an end of the part which is opposite the surface to be ground and polished,

said lateral support means comprising a shell attached to the

spherical support means and having a generally cylindrically shaped opening extending radially through the shell and providing sidewall means for locating and supporting the sides of the part, and

wherein the opening in the shell exposes a spherical seating surface for the inner end of the part and which enables the outer end of the part to be ground to a curvature concentric with the underlying precisely formed spherical surface of the block.

4,266,997

METHOD OF COUPLING PLASTIC PIPES BY WELDING

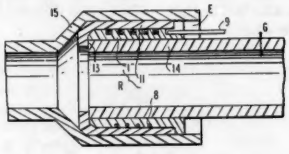
Noel Lippera, Blenod Les Pont-A-Mousson, France, assignor to Pont-A-Mousson S.A., Nancy, France

Division of Ser. No. 789,327, Apr. 20, 1977, Pat. No. 4,176,274. This application Jun. 28, 1979, Ser. No. 53,157

Claims priority, application France, Jun. 3, 1976, 76 17182

Int. Cl.[3] H05B *3/58;* **B29C** *27/02*

U.S. Cl. 156—158 **2 Claims**



1. In a method of coupling a male plastic pipe end to a socket plastic pipe end by axially fitting a connecting piece comprising a bifilar electrical heating resistance wire element with plastic material onto one of the two pipe ends and then axially fitting the other pipe end onto said one pipe end equipped with said connecting piece with two free ends of said bifilar electrical heating resistance wire element remaining accessible at the mouth of the socket end and energizing said bifilar electrical heating resistance wire element covered with plastic material to couple said male plastic end and said socket plastic end by electric welding by melting of said plastic material, the improvement comprising the steps of:

forming said connecting piece of two complementary concentric plastic rings for axial sliding fit, one to the other, said complementary interfitted plastic rings being essentially of equal thickness, said complementary rings comprising internal and external rings,

and said method further including the step of helically grooving the radial periphery of one of said rings in sliding contact with the periphery of the other ring to a depth approximately equal to the diameter of said bifilar electrical heating resistance wire element,

winding said bifilar electrical heating resistance wire element to said one complementary ring within said groove, with said bifilar electrical heating resistance wire element being just below the surface of said other plastic ring, and

axially fitting said plastic rings concentric to each other;

whereby, said bifilar electrical heating resistance wire element is centered relative to said connecting piece and to both pipe ends such that energization of said bifilar electrical heating resistance wire element causes, upon melting of said inner and outer rings, uniform welding of said male end and socket end of said pipes together.

4,266,998

METHOD FOR PRODUCING DOUBLE-FACED CORRUGATED BOARDS

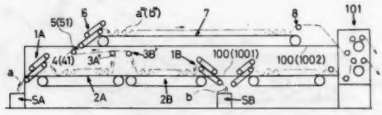
Masateru Tokuno, Nishinomiya, Japan, assignor to Rengo Co., Ltd., Osaka, Japan

Filed Apr. 28, 1980, Ser. No. 144,308

Claims priority, application Japan, May 2, 1979, 54-54292; Sep. 17, 1979, 54-119899; Mar. 15, 1980, 55-33173

Int. Cl.[3] B31F *5/00*

U.S. Cl. 156—159 **5 Claims**



1. A method for producing double-faced corrugated boards, which includes a method for changing single-faced corrugated boards, characterized in that said method for changing single-faced corrugated boards comprises the step of:

cutting a single-faced corrugated board, which is fed from a single facer onto a bridge and delivered from the bridge into a double facer, at a position which is located on or before said bridge;

and splicing the tailing edge of the board with the leading edge of another single-faced corrugated board which is fed from another single facer onto said bridge.

4,266,999

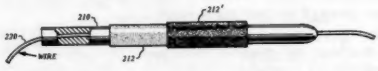
CATHETER FOR LONG-TERM EMPLACEMENT

Robert E. Baier, Buffalo, N.Y., assignor to Calspan Corporation, Buffalo, N.Y.

Filed Jul. 30, 1979, Ser. No. 61,584

Int. Cl.[3] B32B *31/00;* **A61M** *25/00;* **B29C** *19/02*

U.S. Cl. 156—227 **8 Claims**



1. A method for making a sheath for a catheter including the steps of:

forming a cured elastomeric sheath on a mandrel;

coating the sheath with elastomeric coating material;

contacting the elastomeric coating material on the mandrel with solid, solvent-soluble particles while the elastomeric coating material is in a tacky state;

curing the elastomeric coating material containing said particles;

leaching said particles from the cured elastomeric coating material to produce a roughened surface suitable for tissue ingrowth;

removing the coated sheath from the mandrel;

trimming the sheath;

placing the sheath on a catheter such that when the sheath is folded back to form a cuff, the roughened surface will form the outer surface of the cuff;

folding back the sheath to form a relatively large cuff;

glow discharge treating the external surface of the relatively large cuff; and

pushing back the sheath to form a relatively smaller cuff whereby when the catheter is fixedly implanted in a body, tissue ingrowth will occur at the roughened outer surface of the cuff and the outward growth of the skin will peel back the cuff exposing new surfaces for tissue ingrowth while the catheter remains securely in place.

7. A catheter for long-term emplacement including:

core means for the percutaneous transmission of energy or matter;

anchoring means for securing said core means in place; and an elastomeric sheath located on said core means and folded back to form a cuff having an outer surface roughened by leaching solid solvent-soluble particles from a coating on the outer surface of said cuff and further having been treated by glow discharge in order to render the outer surface of said cuff suitable for tissue ingrowth whereby when said catheter is fixedly implanted in a body by said anchoring means, tissue ingrowth will occur at the outer surface of the cuff and the outward growth of the skin will peel back said cuff exposing new surfaces for tissue ingrowth while the catheter remains securely in place.

4,267,000

METHOD FOR MASKING GLASS, GLASS-CERAMIC AND CERAMIC SURFACES

James F. Dix, Horseheads; Clarence E. Ford, Jr., Painted Post; Ray B. Forker, Jr., Horseheads, all of N.Y., and Ronald E. Johnson, Tioga, Pa., assignors to Corning Glass Works, Corning, N.Y.

Filed Sep. 13, 1979, Ser. No. 74,908
Int. Cl.³ B44C *1/18*
U.S. Cl. 156—235 **6 Claims**

1. A method for masking selected areas of a glass, glass-ceramic, or ceramic surface against coating compositions which comprises the steps of:

(a) applying a thermoplastic molten masking coating consisting essentially, in weight percent, of about 10–60% bentonite clay, 0–40% of a refractory metal oxide, and 40–80% thermoplastic organic medium from a heated surface onto the surface of an elastomeric or silicone-coated body;

(b) cooling said masking coating on said elastomer or silicone-coated body to a temperature at which said coating exhibits sufficient tack and cohesiveness to enable transfer of the resultant coating from the elastomeric or silicone-coated body to the surface to be masked;

(c) bringing said elastomeric or silicone-coated body into contact with the surface of a glass, glass-ceramic, or ceramic article to transfer said coating to said article surface in said selected areas.

4,267,001

METHOD FOR MAKING PICTURE RECORDS

Harold F. Dague, Costa Mesa, Calif., assignor to Pic Disc, Inc., Los Angeles, Calif.

Filed Apr. 9, 1979, Ser. No. 28,579
Int. Cl.³ B29C *3/00*; B29D *17/00*
U.S. Cl. 156—245 **27 Claims**

1. A method of making a picture record comprising the steps of:

(a) printing a picture on a first surface of paper;

(b) laminating said first surface with a thin clear thermoplastic sheet to form a laminated paper including a laminated picture having said picture showing through the clear thermo plastic sheet;

(c) cutting the laminated paper including said laminated picture to a diameter less than the diameter of the flash lands on a record press and greater than the diameter of the sound grooves on a finished record, said thermoplastic sheet being cut to the same diameter as the laminated picture;

(d) loading said laminated picture made in accordance with steps (a) through (c) into a record press having a first and second platen with at least one of said platens having sound grooves defined on the surface of said platen, with picture and clear thermoplastic sheet facing the platen having said sound grooves;

(e) placing a quantity of thermoplastic material adjacent a second surface of the paper; and

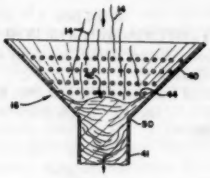
(f) closing the record press to mold a record and impress sound grooves into the outer surface of the clear thermoplastic sheet.

4,267,002

MELT BLOWING PROCESS

Cephas H. Sloan; Jerry A. Wright, and Gerald P. Morie, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 5, 1979, Ser. No. 17,744
Int. Cl.³ B22B *31/00*
U.S. Cl. 156—276 **11 Claims**



1. Process of forming a fibrous mass comprising the steps of

(1) extruding an attenuating molten thermoplastic material into a plurality of fibers by directing a jet of gas at the extruded material, said jet being directed such as to move the fibers toward a collecting and forming device having a radially flared end portion which converges into a throat section,

(2) intercepting said fibers by said collecting and forming device to obtain a relatively heavy build-up of fibrous mass in the throat section, the mass decreasing as the radius of the flared upper section increases,

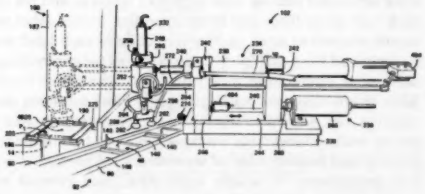
(3) withdrawing the fibrous mass from said throat at a speed synchronized with the build-up of fibers on said collecting and forming device such that the outer fibers on said flared section are continuously folded back over the core of said fibrous mass to form a relatively dense skin and providing a generally randomly parabolic orientation of fibers in longitudinal cross-section.

4,267,003

AUTOMATIC SOLAR CELL GLASSING MACHINE AND METHOD

Hans G. Mesch, Manhattan Beach; Colin H. Debenham, Oceanside, and Robert K. Yasui, Torrance, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Aug. 14, 1979, Ser. No. 66,581
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—356 **23 Claims**



1. A solar cell glassing machine, comprising:

adhesive dispensing means for applying adhesive to the faces of solar cells,

cover glass dispensing means for applying a coverglass to each cell face,

means for effecting relative movement of solar cells past said dispensing means and operating said dispensing means in timed relation to apply adhesive and then a coverglass to the face of each cell to form an adhesively bonded cell stack, and means for positively aligning each coverglass relative to its respective solar cell

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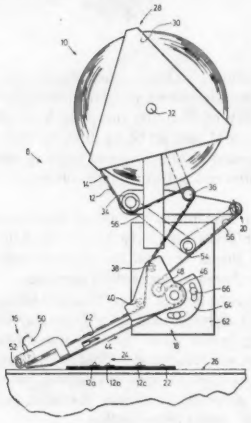
4,267,004

LABEL POSITION SENSOR FOR LABELLER

Dale L. Anderson, Mound, Minn., assignor to Datafile Limited, Willowdale, Canada

Filed Mar. 8, 1979, Ser. No. 17,966
Int. Cl.³ B32B *1/00*
U.S. Cl. 156—361 **12 Claims**



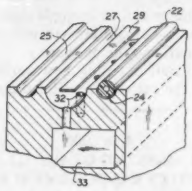
1. In labelling apparatus for applying labels to a continuously conveyed article, a labeller adapted to use a supply of labels carried on a web, each such label having a pressure-sensitive adhesive on its back which is releasably affixed to such web, said labeller comprising a label separation means for commencing a separation of a label leading edge from such web, said label separation means being located proximate such article to be labelled when conveyed thereby, label application means for contacting such pressure-sensitive adhesive side of separated label leading edge with such conveyed article, web handling means for feeding such supply of labels to and for taking such web away from said label separation means, label sensor means adapted to sense said leading edge of such label next to be separated from such web, control means for controlling web movement, said control means on receiving a signal from said label sensor that said leading edge of label has been sensed, controls said web handling means in separating at least such sensed leading label edge from such web and continue movement of said leading edge of separated label portion to a position preparatory to article application, said control means timing the resumption of web movement to synchronize label speed with the detected article speed for contacting the label at the desired location on such conveyed article.

4,267,005

HEAT SEALING APPARATUS

Roland E. Barnaby, Leggett Rd. R.D. 1, High Falls, N.Y. 12440

Filed Apr. 30, 1979, Ser. No. 34,748
Int. Cl.³ B29C *27/02*
U.S. Cl. 156—380 **8 Claims**



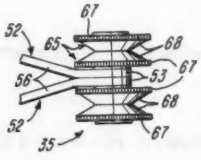
1. Apparatus for bonding overlapping thermoplastic films comprising complementary mating head portions adapted to be brought together across the film layers to be heat bonded, support means carried by at least one of the heads to hold the plastic films in laminated relationship and under tension transversely of the bonding line, each head having a longitudinal cavity to overlie the bonding area, an electrical resistance wire suspended in each cavity spaced from the plane of the plastic films to define a radiation gap, means to pulse the wires with electrical energy to establish radiation to melt the plastic films to effect severing through the films along a parting line and bonding of the overlapping molten films in beads on both sides of the parting line, and duct means to introduce coolant fluid into at least one of the cavities, said ducts being positioned to discharge jets of coolant fluid directly against the wire on the side opposite the plastic films, thereby to impinge directly on the wire to reduce the temperature and indirectly on the bonding film to effect hardening thereof without destroying the beads, said coolant fluid being introduced a predetermined time after the application of radiant energy and before release of the support means holding the laminated films.

4,267,006

LABEL PRINTING APPARATUS

Donald L. Karn, Springboro, and James A. Makley, Miamisburg, both of Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Oct. 3, 1979, Ser. No. 81,374
Int. Cl.³ B65C *11/02*
U.S. Cl. 156—384 **11 Claims**



1. Labeling apparatus adapted for successively printing, dispensing and applying a series of pressure sensitive labels to corresponding articles, said apparatus comprising means for supporting a supply roll of pressure sensitive labels carried by a web, selectable printing means for printng selected characters on each label, means for advancing the web, means for delaminating each printed label from the web in response to advancement of the web, a label applicator including a series of separate label applicating wheels mounted on a support shaft, each said wheel having a peripheral surface positioned to engage the printed side of each label for pressing the label against the corresponding article being labeled, each said wheel having a hub portion projecting axially from said peripheral surface by a predetermined distance to provide said

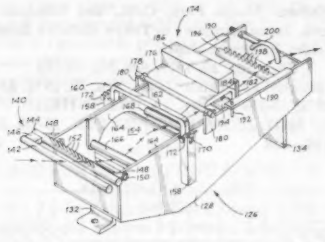
wheel with a non-symmetrical cross-sectional configuration, and means for arranging said hub portions of said wheels at different axial positions on said shaft for positioning the corresponding peripheral surfaces at different axial positions to accommodate labels printed at different locations by different arrangements of said printing means and to engage an unprinted portion of each printed label.

4,267,007

WINDING APPARATUS FOR THE MANUFACTURE OF FILAMENT-WOUND, REINFORCED RESINOUS PRODUCTS

Charles W. Kellogg, 18220 NE. Cramer Rd., Battleground, Wash. 98604

Filed Mar. 19, 1979, Ser. No. 21,679
Int. Cl.[3] B65H *81/00*
U.S. Cl. 156—425 **6 Claims**



1. Winding apparatus for the manufacture of filament-wound, reinforced resinous products, comprising:

(a) a mandrel,

(b) mandrel mounting means rotatably mounting the mandrel,

(c) a track positioned parallel to the mandrel, a spaced distance therefrom,

(d) a reciprocating carriage on the track,

(e) drive means for the mandrel and the carriage,

(f) variable speed coupling means coupling the drive means to the mandrel for rotating the same at a selected rotational speed,

(g) a vat supported on the carriage and adapted to contain a quantity of liquid settable resin,

(h) mounted in the vat an upstream filament guide for guiding a plurality of filaments in separated parallel relation into the vat,

(i) a resin applicator roll rotatably mounted in the vat downstream from the upstream filament guide with at least its lower portion submerged in the liquid resin,

(j) a filament holddown guide assembly positioned above the roll for holding the filaments in frictional engagement with the upper surface of the roll, the filament holddown guide assembly comprising a pair of vertical guides mounted on opposite sides of the vat, a substantially U-shaped bracket dimensioned for reception in the guides, a pair of transverse plates fastened to the bracket and secured in parallel relation to the opposite sides of the bracket, and a pair of guide bars extending transversely across the vat and mounted between the plates, one on each end thereof,

(k) a squeegee assembly positioned downstream from the applicator roll for wiping excess resin from the filaments,

(l) a downstream filament guide for maintaining the filaments in separated parallel relation as they traverse the vat and

(m) a terminal clustering guide for clustering the filaments as they leave the vat and are applied to the mandrel,

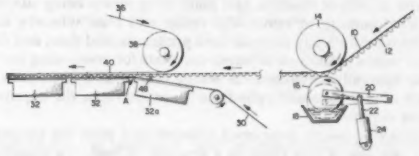
(n) the clustered filaments being attached to the rotating mandrel and being pulled thereby through the vat.

4,267,008

CORRUGATING MACHINE

James J. Owens, Ware, Mass., assignor to Eastern Container Corporation, Springfield, Mass.

Filed Sep. 24, 1979, Ser. No. 78,088
Int. Cl.[3] B31F *1/20*; B32B *31/04*
U.S. Cl. 156—462 **1 Claim**



1. In a corrugated board making machine comprising apparatus for the forming of a corrugated web consisting of upper and lower liners and a pre-corrugated medium sandwiched between and bonded to the liners and wherein the upper liner and corrugated medium are first bonded together prior to passage through a gluing section for the adhesive coating by a primary adhesive applying means of the yet exposed flutes of the corrugated medium preliminary to passage to a double backer section for entrainment with and bonding to the lower liner, the improvement adapted expressly for and operative only in such machine downtime situations as where a length of the forming web carrying a section of yet exposed flutes of the corrugated medium and charge of adhesive is exposed while stopped in transit before entrainment with and bonding to the lower liner with a resultant drying of the adhesive charge and comprising:

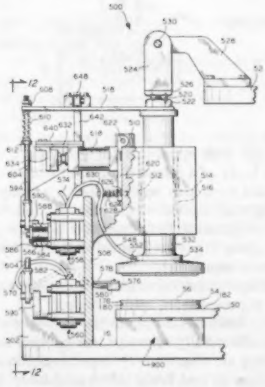
a supplemental adhesive applying means disposed transversely of the forming web and between the lower liner and the corrugated medium inboard of their point of joinder for spraying a controlled shower of adhesive in the nip, and timing means rendering the shower operative for an interval commencing only upon machine start up following a down time situation and until the newly glued portion of the corrugated medium arrives at the nip.

4,267,009

APPARATUS FOR ASSEMBLING CLOSURES

William R. Eddy, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 6, 1979, Ser. No. 55,232
Int. Cl.[3] B37B *31/00*
U.S. Cl. 156—538 **20 Claims**



1. In an apparatus for assembling closures, each closure

including a generally cylindrical ring having a generally cylindrical outer surface and generally circular open ends and a generally circular disc, for use with a generally cylindrically shaped container, of the type which includes a plate having an upper surface and a lower surface and a plurality of ring receiving means on said upper surface each adapted for receiving one of said generally cylindrical rings thereon; plate drive means operatively related to said plate for rotating said plate about an axis of rotation, said plate drive means being adapted to continuously incrementally rotate said plate whereby said plate is periodically stopped for a predetermined time; and disc feed means positioned adjacent said plate for positioning one of said generally circular discs within one of said open ends of each of said generally cylindrically shaped rings, the improvement comprising:

ring feed means positioned adjacent said plate for positioning one of said rings on a first one of said ring receiving means;

adhesive dispensing means positioned adjacent said plate for dispensing a quantity of adhesive at at least one location within one of said open ends of one of said rings on a second one of said ring receiving means;

lubricant dispensing means positioned adjacent said plate for dispensing a quantity of lubricant on at least one of said rings; and

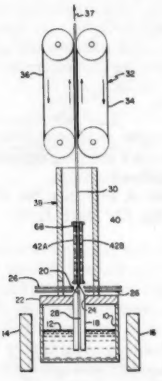
ejecting means positioned adjacent said plate for ejecting a ring-type closure from a third one of said ring receiving means.

4,267,010

GUIDANCE MECHANISM

Herbert E. Bates, Sudbury, and Stanley W. Strzepek, Hudson, both of Mass., assignors to Mobil Tyco Solar Energy Corporation, Waltham, Mass.

Filed Jun. 16, 1980, Ser. No. 159,837
Int. Cl.³ C30B *15/24*
U.S. Cl. 156—608 **14 Claims**



1. For use with apparatus for growing a substantially flat crystalline body of a selected material from a melt of the same material, said apparatus being of the type comprising means for establishing a melt pool of said material and pulling means for pulling a substantially flat crystalline body progressively from said pool along a predetermined axis, an improved guidance mechanism comprising:

a pair of heat-conductive plates for guiding said body as said body is pulled from said pool; and

means for holding said plates stationary relative to said melt pool substantially opposite and parallel to one another so that they are disposed (1) respectively on opposite sides of and close to said body when said body is pulled by said pulling means from said pool, and (2) in a region between said pool and said pulling means where said body cools through a range of temperatures at which significant plastic deformation of said body occurs;

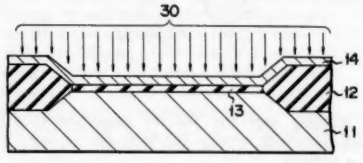
said plates having confronting mutually spaced surfaces forming a passageway therebetween, the passageway having a minimum size measured from one to the other of said surfaces which size is (1) greater than the maximum expected thickness of said body passing therebetween and (2) sufficiently small so that when flatness variations produced in said body as it is pulled from said melt pool exceed a predetermined maximum dimension as determined by said minimum size the body interacts with said plates so as to reduce those flatness variations in the body so as not to exceed said predetermined maximum dimension.

4,267,011

METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE

Tadashi Shibata, Menlo Park, Calif., and Hisakazu Iizuka, Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 20, 1979, Ser. No. 77,272
Claims priority, application Japan, Sep. 29, 1978, 53-119211; Sep. 29, 1978, 53-119212; Sep. 29, 1978, 53-119213
Int. Cl.³ H01L *21/306;* **B44C** *1/22;* **C03C** *15/00, 25/06*
U.S. Cl. 156—628 **6 Claims**



1. A method for manufacturing a semiconductor device, comprising:

a process for forming an insulating film at least on part of the surface of a semiconductor;

a process for forming a polycyrstalline silicon layer on said insulating film;

a process for forming an electrically conductive portion by patterning of said polycrystalline silicon layer; and

a process for forming other insulating film covering at least said electrically conductive portion;

said method characterized by further comprising a process for flattening and homogenizing at least a part of said polycyrstalline silicon layer by applying a laser light or electron beam to said at least a part of said polycyrstalline silicon layer which is to be formed as said electrically conductive portion, prior to the patterning process.

4,267,012

PROCESS FOR PATTERNING METAL CONNECTIONS ON A SEMICONDUCTOR STRUCTURE BY USING A TUNGSTEN-TITANIUM ETCH RESISTANT LAYER

John M. Pierce, Palo Alto; William I. Lehrer, Los Altos, and Kenneth J. Radigan, Mountain View, all of Calif., assignors to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Filed Apr. 30, 1979, Ser. No. 34,781
Int. Cl.³ H01L *21/283, 21/308*
U.S. Cl. 156—643 **19 Claims**

1. A process for patterning a layer of conductive material formed on a semiconductor structure comprising;

depositing a first layer of an alloy of tungsten and titanium on the semiconductor structure;

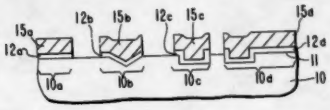
depositing the layer of conductive material onto the first layer;

removing undesired portions of the layer of conductive material by etching said layer with a plasma containing

chlorine, wherein the plasma etching is substantially stopped by the first layer after etching through the layer of conductive material;

removing the thereby exposed portions of the first layer with an etchant other than the plasma etchant used to etch the layer of conductive material;

removing selected portions of the first layer, said selected portions lying beneath the layer of conductive material



and contiguous to the edge of the layer of conductive material; and

treating at least those portions of the layer of conductive material from beneath which the first layer has been removed to cause those portions to come into contact with the underlying material, the treating including forming a layer of dielectric material over the surface of the layer of selected material.

4,267,013

METHOD FOR DRY-ETCHING ALUMINUM AND ALUMINUM ALLOYS

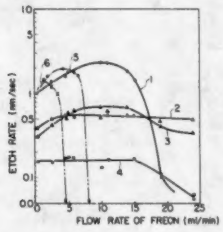
Shinya Iida, Tama; Kazuyoshi Ueki, Ohme; Hideo Komatsu, Hinodemachi, and Tatsumi Mitzutani, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 5, 1979, Ser. No. 45,744

Claims priority, application Japan, Jun. 5, 1978, 53-66772

Int. Cl.³ C23F *1/00, 1/02*

U.S. Cl. 156—643 **17 Claims**



1. A method for dry-etching aluminum and aluminum alloys which comprises producing plasma discharges with a gas comprising boron trichloride and at least one member selected from the group consisting of a halogenated hydrocarbon selected from the group consisting of CF_4, C_2F_6, C_3F_8, C_4F_8, CHF_3 and CCl_2F_2 and oxygen and patterning aluminum or an aluminum alloy with ions or radicals generated by said discharges.

4,267,014

SEMICONDUCTOR ENCAPSULANT FOR ANNEALING ION-IMPLANTED GaAs

John E. Davey, Alexandria; Aristos Christou, and Harry B. Dietrich, both of Springfield, all of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 29, 1980, Ser. No. 126,088

Int. Cl.³ H01L *21/265, 21/324*

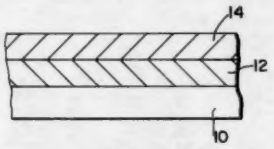
U.S. Cl. 156—662 **11 Claims**

1. A method of forming an ion-implanted GaAs device which comprises:

implanting ions into one surface of a GaAs substrate,

vacuum-depositing onto said ion-implanted surface an encapsulant selected from the group consisting of germanium, gallium-arsenide, and gallium-aluminum-arsenide,

annealing said encapsulated, ion-implanted GaAs substrate to remove any ion implantation damage,



subsequent to annealing said encapsulated ion-implanted GaAs substrate, selective-chemical-etching said encapsulant to remove said encapsulant from said ion-implanted GaAs substrate without any damage to said ion-implanted GaAs substrate.

4,267,015

PROCESS FOR COOLING HOT CONCENTRATED MILK COMING FROM AN EVAPORATOR, BY EXPANSION BY STAGES

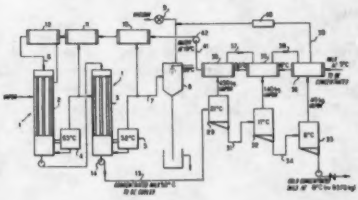
Jacques J. Ciboit, 164 bis, rue de l'Université, 75007 Paris, and Pierre R. Laguilharre, 6, rue Robin, 95880 Enghien les Bains, both of France

Filed Apr. 10, 1979, Ser. No. 28,859

Claims priority, application Luxembourg, Apr. 11, 1978, 79411

Int. Cl.³ B01D *1/26, 1/28*

U.S. Cl. 159—47 R **11 Claims**



1. A process for concentrating a liquid comprising:

evaporating and concentrating an incoming cool liquid in a multi-effect evaporator;

eliminating vapor resulting from said evaporation and concentrating step;

cooling the hot concentrated liquid in expansion stages under decreasing pressure;

interacting the vapor from an expansion stage in a condenser for preheating the incoming cool liquid prior to the multi-effect evaporator and further concentrating said concentrated liquid in the expansion stage; and

eliminating vapor resulting from said interacting step.

4,267,016

POLYVINYL ALCOHOL FIBER FOR BINDING A FIBROUS SHEET AND A PROCESS FOR THE PREPARATION THEREOF

Masaki Okazaki, 4-20-(14-405) Fukushima, and Akio Mizobe, 2-6-19 Fukushima, both of Okayama-City, Okayama Prefecture, Japan

Filed Oct. 23, 1979, Ser. No. 87,347

Claims priority, application Japan, Oct. 23, 1978, 53-130764; Oct. 26, 1978, 53-132435

Int. Cl.³ D21H *5/12*

U.S. Cl. 162—146 **10 Claims**

1. A fibrous sheet exhibiting enhanced wet strength compris-

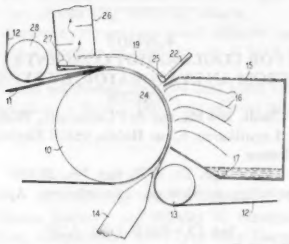
ing a dispersion of paper stock fibers and from 2 to 30 percent by weight of polyvinyl alcohol fibers, said polyvinyl alcohol fiber comprising a water-soluble polyvinyl alcohol fiber containing from 5 to 50 percent by weight of an adduct comprising a polyamide condensation product and a 1-halogen-2,3-epoxy propane or ethylene glycol diglycidyl ether, said fiber, when not having been heat treated at a temperature about 120° C., possesses the latent ability of becoming boiling-water resistant upon being heat treated at a temperature above 120° C., said sheet having been heat treated at a temperature above 120° C.

4,267,017

DRAINAGE ROOF FOR TWIN WIRE ROLL FORMER

Merle W. North, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Jan. 9, 1980, Ser. No. 110,597
Int. Cl.³ D21F *1/66*
U.S. Cl. 162—190 **6 Claims**



1. A twin wire forming apparatus for forming a fibrous web comprising:

an imperforate rotatable roll,

a first liquid permeable forming wire,

means for guiding said first forming wire about a portion of the periphery of said rotatable roll,

a second liquid permeable forming wire,

means for guiding said second forming wire about the same portion of said periphery as said first forming wire,

delivery means for delivering a liquid suspension of fibers between said forming wires as said wires are being received about said portion of said rotatable roll,

an arcuate imperforate roof conforming to the periphery of said rotatable roll along a limited part of said portion of said rotatable roll over which said two forming wires travel,

injection means for injecting pressurized air along the surface of said roof to form an air film therealong, and

collector means at the end of said portion for collecting liquid expelled from the forming wires during their travel along said portion.

5. The method of forming a fibrous web which comprises:

providing a rotating imperforate roll,

training a pair of liquid permeable forming wires over a limited portion of said imperforate roll,

depositing a fibrous stock suspension between said forming wires as they converge on said limited portion,

rotating said imperforate roll at a sufficiently high velocity to cause water droplets and mist to be ejected from the stock suspension present between said forming wires,

passing said forming wires and the fibrous web confined an imperforate roof conforming to the periphery of said imperforate roll spaced relation to said imperforate roll, injecting a film of pressurized air between the interior of said roof and said imperforate roll to carry away water droplets and mist which could otherwise be deposited on said roof and collecting the water carried away by said air film to prevent its redeposition on said forming wires.

4,267,018

METHOD FOR CHANGING FABRICS IN PAPER MANUFACTURING MACHINES

Eino J. Haltsonen, and Martti T. Oksanen, both of Jyväskylä, Finland, assignors to Valmet Oy, Finland

Filed Aug. 15, 1979, Ser. No. 66,836
Claims priority, application Finland, Aug. 17, 1978, 782521
Int. Cl.³ D21F *1/10*
U.S. Cl. 162—200 **6 Claims**

1. A method for introducing an endless fabric loop over rolls in a paper making machine for changing the fabrics therein, comprising the steps of:

providing an inflatable changing bag which, upon being inflated, has a vertical cross-sectional configuration in the machine direction which is substantially the same as the configuration of the intended run of the fabric loop;

positioning the inflatable changing bag in its at least partially deflated condition within the fabric loop to be introduced over the paper machine rolls;

inflating the bag with the fabric loop encircling the same and positioning the resulting assembly on one side of the paper machine in the region adjacent to the rolls onto which the fabric loop is to be introduced; and

while the changing bag maintains the configuration of the fabric loop, pulling the fabric loop over the inflatable bag into the paper machine so that it encircles the rolls.

4,267,019

NUCLEAR FUEL PARTICLES

James L. Kaae, Solana Beach, Calif.; George H. Reynolds, Houston, Tex.; Stewart A. Sterling, San Diego, and Ling Yang, La Jolla, both of Calif., assignors to General Atomic Company, San Diego, Calif.

Filed May 10, 1978, Ser. No. 904,518
Int. Cl.² G21C *3/06*
U.S. Cl. 176—82 **8 Claims**

1. A nuclear fuel particle having a core of nuclear fuel material, a surrounding layer of low density pyrolytic carbon adjacent said core and a continuous layer of higher density material exterior of said low density layer wherein the improvement comprises said core being formed of nuclear fuel selected from the group consisting of uranium oxide, thorium oxide, plutonium oxide and mixtures thereof and therefore being subject to undergo thermal migration and also being subject to undergo the loss of oxygen upon fissioning which forms CO with carbon in said surrounding low density layer and wherein particles of a substance selected from the group consisting of silicon carbide, zirconium carbide and mixtures thereof are dispersed throughout said low density pyrolytic carbon layer whereby not only is the build-up of carbon monoxide within said high density outer layer effectively counteracted but thermal migration of said core is also reduced to such an extent that the amoeba effect is no longer of consequence during normal fuel life.

4,267,020

NUCLEAR STEAM GENERATOR WRAPPER AND SHELL ASSEMBLY AND METHOD FOR ASSEMBLING

Robert D. Burack, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 14, 1978, Ser. No. 933,335
Int. Cl.² G21C *15/16*
U.S. Cl. 176—87 **2 Claims**

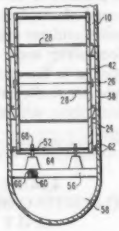
1. A nuclear steam generator internal wrapper assembly and shell construction comprising:

a generally cylindrical shell of a given diameter vertically disposed in a nuclear containment building, said shell having an apertured tube sheet in its lower end portion;

a wrapper assembly comprising at least an upper and a lower separate modules, each module including a substantially round, upright cylinder with vertically spaced apart tube support plates in the form of apertured, substantially

round discs therein, said modules being in stacked relation and being welded together in the vicinity of the abutting rims to form the wrapper assembly;

said wrapper assembly being of a sufficiently lesser diameter than said shell as to fit therein with an annular space between said assembly and shell; and



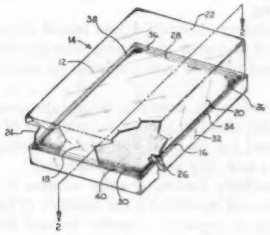
a plurality of adjustable spacer means fixed to the outer circumference of said modules and sized to be received in said annular space and adjustable outwardly for locking said wrapper assembly within said shell with substantial axial alignment of the apertures in the plates and sheet, irrespective of variations in width of the annular space at different locations.

4,267,021

METHOD AND APPARATUS FOR SOLAR DISTILLATION

Dimitrios M. Speros, and Philip C. Speros, both of 10293 Prouty Rd., Painesville, Ohio 44077

Filed Feb. 27, 1978, Ser. No. 881,613
Int. Cl.³ C02F *1/14*; B01D *1/22*
U.S. Cl. 202—176 **16 Claims**



1. An inclined floor solar distillation apparatus which comprises:

(a) chamber means including floor, roof, bottom, top and side wall members which form an enclosed perimeter about an inclined floor member by abutting relationship where solar distillation takes place,

(b) liquid distilland feed means including a longitudinally extending conduit member located at the top end of said enclosed perimeter and extending between the side walls, said conduit member feeding distilland to the floor member,

(c) a liquid absorbent covering disposed on the floor member of said enclosed perimeter and operatively connected to the conduit member by wick means for continuous wetting of said covering by a capillary action to feed the distilland at a predetermined flow rate,

(d) sidewall members extending between floor and roof members to intersect with top and bottom wall members and define said enclosed perimeter, the aggregate surface area of said wall members being at least equal to the surface area of said floor member for laminar vapor flow in said enclosed perimeter which is substantially devoid of vapor turbulence during distillation,

(e) a transparent roof member admitting solar radiation to be absorbed by the floor member, and

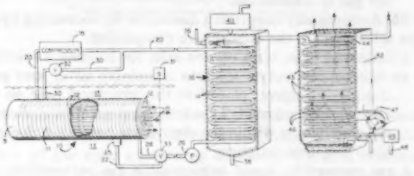
(f) distillate collection means located at the bottom end of said enclosed perimeter and extending between the side wall members.

4,267,022

ENERGY EFFICIENT PROCESS AND APPARATUS FOR DESALINIZING WATER

Frederick L. Pitcher, 310 Hale St., Beverly, Mass. 01915

Continuation-in-part of Ser. No. 791,602, Apr. 27, 1977, abandoned. This application Apr. 26, 1978, Ser. No. 900,079
Int. Cl.³ C02F *1/16*; B01D *1/00*
U.S. Cl. 203—11 **20 Claims**



1. A process for desalinizing water comprising the steps of:

feeding salt water to an enclosure defining an evaporation zone maintained at subatmospheric pressure; boiling the water in the evaporation zone and allowing water vapor to pass to a condensation zone; condensing the vapor in the condensation zone; and collecting desalinized water therefrom, wherein the improvement comprises:

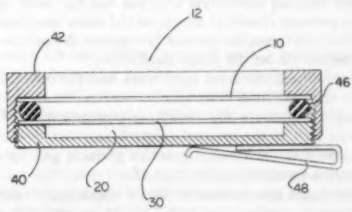
providing the heat of vaporization by transferring heat from a thermal sink comprising a body of water into the evaporation zone and transferring the heat of condensation from the condensation zone into a low temperature sink, at least one of the heat transfers being a transfer from a first temperature to a higher temperature and being effected via a closed system wherein a refrigerant is cyclically condensed and evaporated and wherein the ratio of energy transferred as heat to energy required to effect the transfer is at least 15.

4,267,023

CHEMICALLY INTEGRATING DOSIMETER AND GAS ANALYSIS METHODS

Martin S. Frant, Newton, and Jon Soderberg, East Falmouth, both of Mass., assignors to Orion Research Incorporated, Cambridge, Mass.

Continuation-in-part of Ser. No. 842,394, Oct. 17, 1977, abandoned. This application Nov. 21, 1979, Ser. No. 96,572
Int. Cl.³ G01N *27/46*, *27/56*
U.S. Cl. 204—1 T **47 Claims**



1. Method for detecting hydrogen sulfide gas by chemical integration comprising the steps of:

providing a gas permeable, liquid impermeable outer membrane in conjunction with a liquid impermeable microporous hydrophobic inner membrane, the latter with a gas permeation rate substantially greater than that of the outer membrane;

placing an internal electrolyte solution containing silver ions in contact with the inner membrane;

allowing hydrogen sulfide gas to diffuse through the outer membrane, through the inner membrane, and into the internal electrolyte where the outer membrane is a gas permeation rate controlling membrane, and the inner membrane is a protective membrane;

reacting the internal electrolyte with hydrogen sulfide gas to completely absorb said gas and to alter the composition of the internal electrolyte; and

measuring the change in the concentration of silver ions in the electrolyte due to the entry of hydrogen sulfide gas into the internal electrolyte, whereby the concentration of the gas is determined.

15. A chemically integrating dosimeter for measuring hydrogen sulfide gas in the atmosphere comprising:

a structural base, open on one side, for housing a solution;

an internal electrolyte solution containing silver ions and a complexing agent, placed in the structural base so that upon absorption of H_2S gas into the electrolyte a chemical reaction occurs within the electrolyte causing a change in silver ion concentration;

a gas permeable, liquid impermeable gas permeation rate-controlling outer membrane with a permeation rate for H_2S gas substantially lower than the diffusion rate of H_2S gas in air, placed to cover the opening in the structural base;

a microporous hydrophobic inner membrane substantially more permeable to gases than the outer membrane, impermeable to the internal electrolyte, and interposed between the internal electrolyte solution and the outer membrane to prevent chemical attack on the outer membrane by the electrolyte and to prevent precipitate deposition from the electrolyte on the outer membrane;

means to seal the inner membrane and the outer membrane to the structural base; and

means to measure the change in concentration of silver ions Ag^+ in the internal electrolyte.

27. A chemically integrating dosimeter for measuring sulfur dioxide gas in the atmosphere comprising:

a structural base, open on one side, for housing a solution;

an internal electrolyte solution containing bromide ion and mercuric bromide placed in the structural base so that upon absorption of SO_2 gas into the electrolyte a chemical reaction occurs within the electrolyte causing a change in bromide ion concentration;

a gas permeable, liquid impermeable gas permeation rate-controlling outer membrane with a permeation rate for SO_2 gas substantially lower than the diffusion rate of SO_2 gas in air, placed to cover the opening in the structural base;

a microporous hydrophobic inner membrane substantially more permeable to gases than the outer membrane, impermeable to the internal electrolyte, and interposed between the internal electrolyte solution and the outer membrane to prevent chemical attack on the outer membrane by the electrolyte and to prevent precipitate deposition from the electrolyte on the outer membrane;

means to seal the inner membrane and the outer membrane to the structural base; and

means to measure the change in concentration of bromide ions Br^- in the internal electrolyte.

38. Method for detecting sulfur dioxide gas by chemical integration comprising the steps of:

providing a gas permeable, liquid impermeable outer membrane in conjunction with a liquid impermeable microporous hydrophobic inner membrane, the latter with a gas permeation rate substantially greater than that of the outer membrane;

placing an internal electrolyte solution containing bromide ion and mercuric bromide in contact with the inner membrane;

allowing sulfur dioxide gas to diffuse through the outer membrane, through the inner membrane, and into the internal electrolyte where the outer membrane is a gas permeation rate controlling membrane, and the inner membrane is a protective membrane;

reacting the internal electrolyte with sulfur dioxide gas to completely absorb said gas and to alter the composition of the internal electrolyte; and

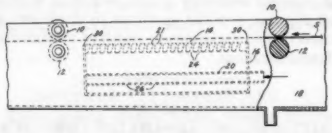
measuring the change in the concentration of bromide ions in the electrolyte due to the entry of sulfur dioxide gas into the internal electrolyte, whereby the concentration of the gas is determined.

4,267,024

ELECTROLYTIC COATING OF STRIP ON ONE SIDE ONLY

Daniel A. Weiskopf, Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Dec. 17, 1979, Ser. No. 104,620
Int. Cl.[3] **C25D** *5/02, 5/08, 7/06*
U.S. Cl. 204—15 **8 Claims**



1. A process for electrolytically coating one side only of a horizontally moving flat rolled strip with a protective metal, comprising the steps of

(a) maintaining the entire upper surface of said strip exposed to the atmosphere while moving said strip along a horizontal path over at least one electrocoating cell, said cell including

(1) a solution chamber whose lateral dimension exceeds that of said strip, and whose sides are below said path,

(2) means to feed coating solution to said solution chamber,

(3) a perforated, insoluble anode disposed within said solution chamber just below said path of said strip, and

(4) means for supplying an electro-coating current between said strip and said anode; and

(b) continuously feeding coating solution to said solution chamber and maintaining the quantity of solution therein in excess of capacity, whereby by said solution feeding means is such as to cause the coating solution to flow through said perforated anode toward said strip edges and countercurrent to said movement of the strip against said one side of the strip while minimizing contact of said solution with the opposite side of said strip.

4,267,025

ELECTRODES FOR ELECTROLYTIC PROCESSES, ESPECIALLY PERCHLORATE PRODUCTION

Vittorio de Nora, Nassau, The Bahamas; Antonio Nidola, Milan, Italy; Placido M. Spaziante, Lugano, Switzerland, and Giuseppe Bianchi, Milan, Italy, assignors to Diamond Shamrock Technologies, S.A., Geneva, Switzerland

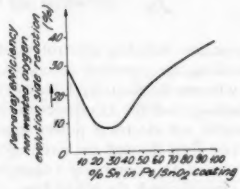
Filed Nov. 26, 1979, Ser. No. 97,360
Int. Cl.[3] **C25B** *1/26, 1/28, 11/08*
U.S. Cl. 204—82 **8 Claims**

1. An electrode for use in electrolytic processes, comprising an electrically-conductive corrosion-resistant substrate having an electrocatalytic coating, characterized in

that the coating contains a mixture of at least one platinum group metal and tin dioxide dispersed in one another throughout the coating in the ratio of from 8.5:1 to 3:2 by

weight of the platinum group metal(s) to the tin of the tin dioxide.

8. A process for the production of chlorates, perchlorates and other percompounds by electrolysis, characterized by



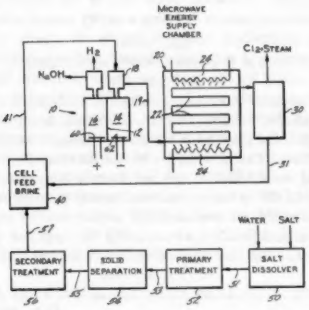
using as anode an electrode as stated in claims **1**, **2**, **4**, **6**, **7**, **3** or **5**.

4,267,026

SPENT BRINE CONCENTRATION USING MICROWAVE ENERGY

Harshad M. Patel, Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

Filed Dec. 21, 1979, Ser. No. 106,180
Int. Cl.[3] **C25G** *1/34*
U.S. Cl. 204—98 **4 Claims**



1. A process for the concentration of spent brine from a membrane electrolytic cell which comprises:

(a) removing spent brine containing dissolved chlorine and from about 14 to about 22 percent by weight of NaCl from said membrane electrolytic cell,

(b) feeding said spent brine to a concentration zone,

(c) applying microwave energy to said spent brine to produce concentrated brine and a gaseous mixture of chlorine and steam,

(d) feeding said concentrated brine and said gaseous mixture to a separation zone,

(e) separating said gaseous mixture from said concentrated brine, and

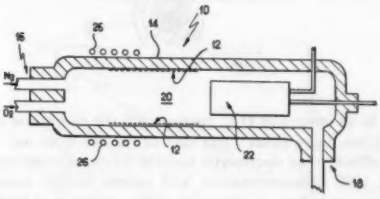
(f) returning said concentrated brine containing from about 23 to about 26 percent by weight of NaCl to said membrane electrolytic cell.

4,267,027

PROCESS AND APPARATUS FOR THE PREPARATION OF NITROGEN OXIDES

Jacques Amouroux, Bure S. Yvette; Demetre Rapakoulias, and Simeon Cavadias, both of Paris, all of France, assignors to Electricite de France (Service National), Paris, France

Filed Mar. 18, 1980, Ser. No. 131,427
Claims priority, application France, Mar. 21, 1979, 7907142
Int. Cl.[3] **C01B** *21/20, 21/30, 21/32*
U.S. Cl. 204—179 **12 Claims**



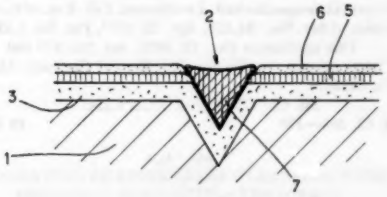
1. Process for the preparation of nitrogen oxides (NO and NO_2) by the reaction of nitrogen and oxygen in a plasma furnace of the type comprising a plasma torch, a reaction chamber and a quenching device, wherein an oxygen and nitrogen plasma is introduced into said reaction chamber, whereof the inner surface of the walls is covered with a catalyst of tungsten trioxide (WO_3) and/or molybdenum trioxide (MoO_3), and a mixture of gaseous reaction products rich in nitrogen oxides (NO and NO_2) is recovered from the region of the quenching device.

4,267,028

PROCESS FOR SMOOTH CUT PRINTING

Daniel Beaune, La Prunerie, Marsac sur l'Isle (Dordogne), France

Filed Jan. 26, 1978, Ser. No. 872,451
Claims priority, application France, Jan. 28, 1977, 77 02505
Int. Cl.[3] **C25D** *13/06, 13/12*
U.S. Cl. 204—181 R **2 Claims**



1. A process for smooth cut printing with a metal printing plate having an engraved portion of smooth cuts and a non-printing surface, said process comprising the steps of;

obstructing the engraved portion with an electrically non-conductive material,

coating the non-printing surface of the plate with at least a layer anti-adhesive towards printing inks formed by electrolytically depositing a solid fluorocarbonaceous resin on said non-printing surface,

removing the electrically non-conductive material from the engaved cut,

coating the plate with a printing ink,

and compacting the ink into the cuts of the engraving.

4,267,029
ANODE FOR HIGH RESISTIVITY CATHODIC PROTECTION SYSTEMS

Philip M. Massarsky, Warren, N.J., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Jan. 7, 1980, Ser. No. 109,959
Int. Cl.³ C23F *13/00*
U.S. Cl. 204—196 **3 Claims**

1. In an impressed D.C. current cathodic protection system for protecting a metal water tank or the like from rust corrosion effects of an electrolytic material having a resistivity of at least 1000 ohm-centimeters, said system having suspension means suspending an improved anode within said tank, said anode comprising:

(a) a cable including

(b) an elongated electrical conductor connected to said source of D.C. current, and

(c) a jacket of electrical insulation on the outside of said conductor for substantially the length thereof, operative to seal said conductor from the electrolytic material in said tank;

(d) a sheet of expanded metal gripping said jacket of generally arcuate cross-section formed about said cable and extending along said cable, said sheet comprising

(e) a substrate made of a first metal from the group consisting of niobium, tantalum and titanium, and

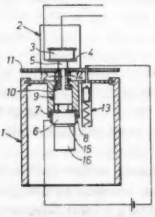
(f) a coating of platinum clad to the outwardly facing surface of said substrate; and

(g) a terminal providing an electrical connection between said electrical conductor and said sheet and including a housing enclosing said electrical connection.

4,267,030
APPARATUS FOR CHECKING GAS ANALYSIS DEVICES

Wolfram Breuer; Wolf-Jürgen Becker, both of Leverkusen; Jacques Deprez, Frechen; Eckard Drope, Cologne; Karl-Heinz Kaufmann, Langenfeld-Immigrath, and Kurt Schreckling, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 791,125, Apr. 25, 1977, Pat. No. 4,151,739.
This application Dec. 15, 1978, Ser. No. 970,100
Claims priority, application Fed. Rep. of Germany, May 15, 1976, 2621677
Int. Cl.³ C25B *1/00, 1/26;* C25C *1/22*
U.S. Cl. 204—278 **19 Claims**



1. An apparatus for checking gas analysis devices with respect to their known sensitivity and their known response and regeneration behavior with respect to time, comprising means for producing a reproducible quantity M_E of the measuring component in a given time interval Δt_E at a predetermined production rate $m_E(t)$, where

$$M_E = \int_{t_E}^{t_E + \Delta t_E} m_E(t)dt$$

by a chemical reaction including electrolytic decomposition means for controlling the chemical reaction comprising an electrolysis cell wherein the electrolyte consists of at least one hygroscopic substance and the electrodes or the electrolyte being gas-permeable and electrical power supply means for producing a current flow through the electrolyte only during the given time interval Δt_E comprising a capacitor and means for discharging same through the electrolysis cell during the time Δt_E, means for guiding at least a constant proportion of the produced measurement component to a measurement sensor of the gas analysis device, means for transforming the temporal distribution of the quantity into a concentration pulse and for applying same to the measurement sensor within a predetermined period and means for evaluating the response of the gas analysis device to the concentration pulse received at the sensor.

11. An apparatus for checking gas analysis devices with respect to their known sensitivity and their known response and regeneration behavior with respect to time, comprising means for producing a reproducible quantity M_E of the measuring component in a given time interval Δt_E at a predetermined production rate $m_E(t)$, where

$$M_E = \int_{t_E}^{t_E + \Delta t_E} m_E(t)dt$$

by a chemical reaction including electrolytic decomposition means for controlling the chemical reaction comprising an electrolysis cell comprising an electrolyte consisting of at least one hygroscopic substance, electrodes or the electrolyte being gas-permeable and means defining a cavity beneath the electrolyte and an electrolyte reservoir below the cavity containing the same electrolyte substance therein and separated from the electrolyte solely by the cavity to enable diffusion interaction and electrical power supply means for producing a current flow through the electrolyte only during the given time interval Δt_E, means for guiding at least a constant proportion of the produced measurement component to a measurement sensor of the gas analysis device, means for transforming the temporal distribution of the quantity into a concentration pulse and for applying same to the measurement sensor within a predetermined period and means for evaluating the response of the gas analysis device to the concentration pulse received at the sensor.

4,267,031
COKING PROCESS

Hideo Hirabayashi, Yokohama; Hiroshi Yamaguchi, Tokyo, and Masahiko Uemura, Ohi, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 26, 1976, Ser. No. 745,223
Claims priority, application Japan, Dec. 10, 1975, 50-147672
Int. Cl.³ C10G *9/14*
U.S. Cl. 208—106 **9 Claims**

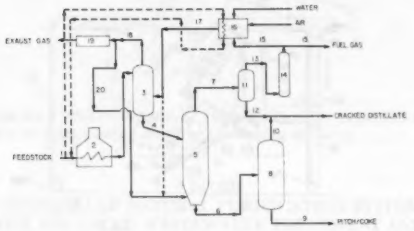
1. A process for coking hydrocarbon oils which comprises the following steps in combination:

(a) preheating a hydrocarbon oil feedstock in a preheating zone to a temperature lower than the cracking temperature of said feedstock;

(b) directly contacting the preheated feedstock from step (a) in a combustion exhaust gas zone with combustion exhaust gas produced in the combustion gas generation zone of step (e), said gas being maintained at a temperature capa-

ble of heating the said feedstock to a temperature higher than its cracking temperature;

(c) thereafter introducing said heated feedstock into a coking zone maintained at a temperature higher than the cracking temperature of said feedstock so as to coke at least a portion of said feedstock;



(d) separating hot gaseous, liquid and solid products from said coking zones;

(e) introducing at least a portion of said hot gaseous product to a combustion gas generation zone; and

(f) introducing at least a portion of the combustion exhaust gas produced in said combustion gas generation zone to said combustion exhaust gas contact zone of step (b).

4,267,032

DEMETALLIZATION PROCESS FOR A CONVERSION CATALYST

Emmett H. Burk, Jr., Glenwood; Jin S. Yoo, Flossmoor; John A. Karch, Chicago, and Jui-Yuan Sun, South Holland, all of Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 58,346, Jul. 17, 1979, which is a continuation-in-part of Ser. No. 840,875, Oct. 11, 1977, abandoned, which is a continuation-in-part of Ser. No. 695,602, Jun. 14, 1976, Ser. No. 695,662, Jun. 14, 1976, Pat. No. 4,101,444, Ser. No. 695,687, Jun. 14, 1976, Pat. No. 4,102,811, and Ser. No. 756,581, Jan. 3, 1977. This application Oct. 4, 1979, Ser. No. 81,724

Int. Cl.[3] **C10G** *11/00, 11/05;* **B01J** *21/20, 29/38*

U.S. Cl. 208—113 **11 Claims**

1. A process for an aqueous phase oxidation of a sulfided and metals contaminated conversion catalyst containing sulfided components to convert at least a portion of said sulfided components to a water dispersible material comprising: treating said sulfided and metals contaminated catalyst in a slurry comprising an effective amount of soluble nitrate ions in the presence of a catalytically effective concentration of nitrite ions at a temperature and for a time sufficient to cause said oxidation of at least a portion of said sulfided components to produce said water dispersible material, and separating from said slurry a conversion catalyst having a reduced amount of metal contaminants.

2. The process of claim **1**, wherein the nitrate ion concentration in moles per liter of solution is in the range of about 0.1 to about 10 moles per liter of solution and the ratio in moles of the nitrate ion concentration to nitrite ion concentration is in the range of about 100:1 to about 10,000:1.

4,267,033

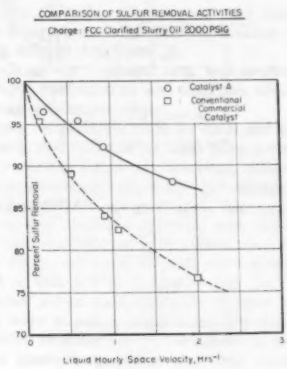
UPGRADING OF AROMATIC LIQUIDS

Roland H. Heck, Pennington; Stephen M. Oleck, Moorestown; Stuart S. Shih, Cherry Hill, and Robert C. Wilson, Woodbury, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 22, 1979, Ser. No. 86,876

Int. Cl.[3] **C10G** *45/04*

U.S. Cl. 208—216 PP **16 Claims**



1. A process for catalytically upgrading a highly aromatic petroleum or coal derived liquid comprising contacting said liquid with hydrogen under hydroprocessing conditions in the presence of a catalyst comprising at least one Group VIII metal or its oxides or sulfides and at least one Group VIA metal or its oxides or sulfides on a refractory base support, said catalyst having a surface area of between about 100 and about 300 m^2/g and a total pore volume of between about 0.5 and about 0.8 cc/g and is further characterized as follows:

Pore Volume Distribution, Volume % in Pores of	
0–150 Angstroms diameter	20–40
150–200 Angstroms diameter	40–60
200+ Angstroms diameter	10–30

4,267,034

SEPARATING OLEFINS FROM PARAFFINS WITH DIMETHYL SULFOXIDE EXTRACTANT

Cecil O. Carter, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 14, 1979, Ser. No. 94,252

Int. Cl.[3] **C07C** *7/10;* **C10G** *21/02*

U.S. Cl. 208—323 **6 Claims**

1. A method for separating olefins from paraffins of corresponding carbon atom content said method comprising:

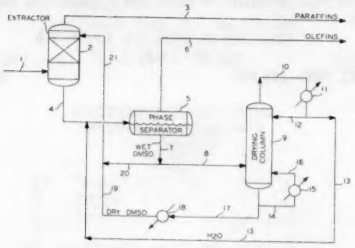
(a) contacting in liquid phase a mixture of said olefin and paraffin with a dimethyl sulfoxide extractant stream in an amount and for a time sufficient to dissolve olefins in the DMSO stream;

(b) separating the paraffin from the DMSO which contains dissolved olefin;

(c) contacting with water the DMSO which contains dis-

solved olefin, thereby causing a phase separation of the contacted mixture into

(1) DMSO and water mixture and



(2) olefin; and

(d) separating said olefin from the DMSO and water mixture.

4,267,035

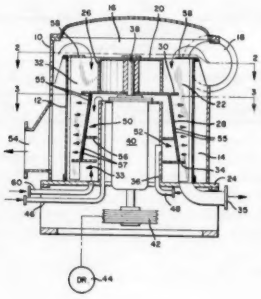
PRESSURIZED ROTARY SCREENING APPARATUS

Andrew C. Martin, Middletown, Ohio, assignor to The Black Clawson Company, Middletown, Ohio

Filed Aug. 27, 1979, Ser. No. 70,209

Int. Cl.[3] **B07B** *1/20*

U.S. Cl. 209—273 **10 Claims**



1. A pressurized rotary screening apparatus comprising a pressurized housing having an upper stock inlet chamber having a tangentially disposed stock inlet, a lower stock screening chamber with a rejects discharge outlet, and an outer annular accepts chamber, said stock screening chamber having a generally cylindrical screenplate with rotary impeller means extending at least a portion of the length of the screenplate and mounted for axial rotation within the screenplate, said rotary impeller means having at least one rotor blade attached thereto and extending outwardly to within a short distance of the radially inwardly facing surface of said screenplate, said rotary impeller means additionally having a plurality of generally horizontally oriented baffle means extending substantially circumferentially around said impeller means and dividing the area between said rotary impeller means and said screenplate into at least three stock treatment sections.

4,267,036

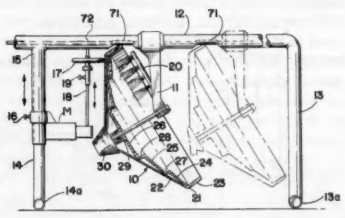
APPARATUS AND METHOD FOR SEPARATING FREE METAL FROM ORE

Jonny H. Kleven, P.O. Box 6979, Burbank, Calif. 91510

Filed Dec. 10, 1979, Ser. No. 102,232

Int. Cl.[3] **B03B** *5/74*

U.S. Cl. 209—444 **12 Claims**



1. An apparatus for separating free metal from ore, comprising:

a. at least one upwardly inclined, rotatable, separating wheel, providing: i. a peripheral lip for retaining ore; ii. a central annulus, the wheel being concentrically rotatable about the annulus; iii. a plurality of spiral separating grooves disposed on the upper portion of the wheel and directed from the periphery to the annulus, the separating grooves providing, in the direction of the periphery to the annulus, an increasing angle of attack to the ore being applied to the wheel; and,

b. means to form a water slurry with the ore on each wheel.

10. A process for separating free metal from ore, comprising:

a. applying the ore containing the metal to at least one upwardly inclined, rotatable separating wheel, said wheel providing: i. a peripheral lip for retaining ore; ii. a central annulus, the wheel being concentrically rotatable about the annulus; iii. a plurality of spiral separating grooves disposed on the upper portion of the wheel and directed from the periphery to the annulus, the separating grooves providing, in the direction of the periphery to the annulus, an increasing angle of attack to the ore being applied to the wheel;

b. forming a water slurry with the ore on each wheel;

c. washing lighter waste ore out of the grooves and downwardly over the peripheral lip; and,

d. forwarding the slurry of beneficiated ore inwardly and upwardly along the spiral grooves and out through the central annulus.

4,267,037

APPARATUS FOR SEPARATING WASTE MATERIAL CONTAINED IN A HEAP

Karlheinz Merz, Waldshut-Tiengen, and Roland Ulrich, Lauchringen, both of Fed. Rep. of Germany, assignors to Karl Merz Maschinenfabrik, Waldshut-Tiengen, Fed. Rep. of Germany

Filed Dec. 14, 1979, Ser. No. 103,698

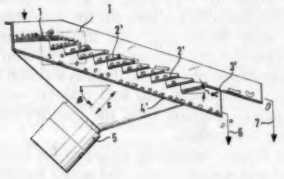
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1978, 2854177

Int. Cl.[3] **B07B** *13/10*

U.S. Cl. 209—481 **13 Claims**

1. Apparatus for separation of waste material in a heap in at least one separating zone including a plurality of inclined conveying surfaces staggered in cascade-like manner with respect to one another, the heap largely comprising similar particles of substantially the same shape, size and density and from which only the waste particles differ, means for feeding the heap onto the inclined surfaces disposed adjacent the top of the separating zone, vibrator means for vibrating the inclined surfaces, the vibration direction thereof being at a larger angle

to the horizontal than the inclinations of said surfaces, the leading edges of the cascade-like conveying surfaces forming a



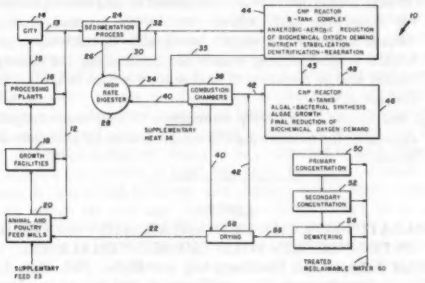
slope over which long and/or voluminous waste particules can slide without passing onto the conveying surfaces.

4,267,038

CONTROLLED NATURAL PURIFICATION SYSTEM FOR ADVANCED WASTEWATER TREATMENT AND PROTEIN CONVERSION AND RECOVERY

Worthington J. Thompson, 109 Powell St., Snow Hill, Md. 21863

Filed Nov. 20, 1979, Ser. No. 95,969
Int. Cl.[3] C02F *3/30, 3/32*
U.S. Cl. 210—602 **17 Claims**



1. A method for controlling the natural purification of settled organic wastewater to provide an advanced wastewater treatment to produce a conversion to microalgae and recovery of same, comprising, first processing the settled organic wastewater by a treatment procedure without a light source, second processing the partially treated wastewater from the first process by a treatment procedure with a light source, causing aeration and turbulence within the wastewater during both the first and second treatment procedures, causing biochemical oxygen demand reduction, nitrification and denitrification, and nitrate-nitrogen removal during the first treatment procedure, and causing biochemical oxygen demand reduction, phosphate-phosphorous removal during the second treatment procedure, and thereafter harvesting microalgal and discharging reclaimable water.

2. A controlled natural purification system for advanced wastewater treatment and microalgae conversion and recovery, comprising:

a first processing tank system, said first processing tank system being fully enclosed and operating without any exposure to daylight;

a second processing tank system, said second processing tank system being exposed to daylight, said second processing tank system being connected to said first tank procession system;

a microalgal harvesting system, said microalgal harvesting system being connected to said second processing tank system;

and a sewerage disposal sedimentation system, said first processing tank system being installed after said sewerage disposal sedimentation system, said first processing tank system receiving settled organic wastewater therefrom as influent for processing,

said first processing tank system consists of:

at least one equalization tank, said equalization tank being installed within said first processing tank system, said equilization tank receiving said settled organic wastewater for initial storage and equalization of temperature and flow rate;

at least one anaerobic filter means, said anaerobic filter means being connected to said equalization tank and receiving influent therefrom;

at least one aerobic treatment tank, said aerobic treatement tank being connected to said anaerobic filter means and receiving influent therefrom;

at least two recirculation tanks for each said aerobic treatment tank, said recirculation tanks being connected to said aerobic treatment tank and receiving influent therefrom for recirculation and later discharge back into said aerobic treatment tank;

at least one denitrification means for each said recirculation tank, said denitrification means being anaerobic denitrification filters, each said denitrification means being connected to said aerobic treatment tank and then further connected to one of said recirculation tanks, said denitrification means receiving said influent from said aerobic tank to stabilize excessive nitrogen in solution as needed during certain seasonal operations and then discharging said influent into said recirculation tank for removal by reaeration;

a first carbon dioxide collecting means, said carbon dioxide collecting means being connected to said first tank system;

a first sludge removal means, said first sludge removal means being installed in said first tank system;

a first methane gas collection means, said first methane gas collection means being connected to said anaerboic filter means;

a first plurality of aerators, said first plurality of aerators being installed in said aerobic treatment tank, said first plurality of aerators aerating air through said influent and causing turbulence therein as it passes through said aerobic treatment tank;

a second plurality of aerators, said second plurality of aerators being installed in said recirculation tanks, said second plurality of aerators aerating air through said influent as it passes through said recirculation tanks;

a baffle means, said baffle means being installed in said recirculation tanks to provide a directional flow control and turbulence in said influent being recirculated; and

a first piping system, said first piping system inter-connecting all elements of said first processing tank system as herein provided and connecting said first processing tank system to said second processing tank system to transfer said influent after processing in said first processing tank system.

4,267,039

FLUID FILTRATION METHOD AND APPARATUS

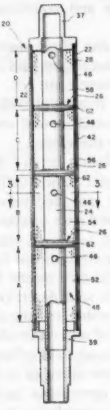
Leo F. Ryan, Bridgewater, N.J., assignor to Ecodyne Corporation, Lincolnshire, Ill.

Continuation of Ser. No. 857,504, Dec. 5, 1977, abandoned. This application Nov. 29, 1979, Ser. No. 98,522
Int. Cl.[3] B01D *37/00*
U.S. Cl. 210—767 **10 Claims**

1. In a filter unit for purifying liquid, having a filter tank, an inlet for passing liquid to be purified into the filter tank, an outlet for removing purified liquid from the filter tank, and a means for precoating filter elements within the tank with a precoat of particles of a filter medium, at least one improved tubular filter element positioned within the tank so that liquid to be purified enters the outer area of the filter element during a service cycle and passes longitudinally through the filter element to a discharge end of the filter element, comprising:

a perforated tubular support member for supporting the precoat of filter medium particles;

a tubular distributor core, concentrically located within said support member to define an annular space between said support member and said distributor core, having a plurality of apertures in the wall of said distributor core; and



a plurality of dividers positioned axially along said distributor core within said annular space to prevent the unimpeded flow of liquid through said annular space, said dividers defining a plurality of annular chambers within said annular space, said annular chambers decreasing in length in a direction away from the service cycle discharge end of the filter element.

4,267,040

HEMODIALYSIS APPARATUS

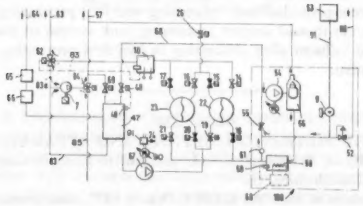
Wilfried Schäl, Bad Homburg von der Hohe, Fed. Rep. of Germany, assignor to Dr. Edward Fresenuis, Chemischpharmazeutische Industrie KG, Apparatebau KG, Bad Homburg, Fed. Rep. of Germany

Filed Aug. 24, 1979, Ser. No. 69,387

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1978, 2838414

Int. Cl.³ B01O *31/00*

U.S. Cl. 210—104 **14 Claims**



1. A hemodialysis apparatus, comprising:

(a) dialyzer means, and dialysis solution supply means,

(b) balancing chamber means having a defined volume

(c) sealing means movably supported in said defined volume, said sealing means separating said defined volume into two chamber components each having respective inlet and outlet means said inlet and outlet means being operatively connected to said dialyzer means and to said dialysis solution supply means,

(d) controllable valve means operatively connected to said inlet and outlet means for controlling the inflow to and the outflow from said chamber components,

(e) control means operatively connected to said controllable valve means for supplying, in a first operational phase, fresh dialysis solution into one of said chamber components while discharging used dialysis solution from the other chamber component, and for transferring, in a second operational phase fresh dialysis solution from said one chamber component into said dialyzer while supplying used dialysis solution from the dialyzer into said other chamber component,

(f) sensor means operatively arranged for sensing end positions of said sealing means, said sensor means being operatively connected to said control means, for controlling the sequencing of said first and second operational phases and vice versa in response to said sealing means reaching its end positions,

(g) adjustable means (7) operatively connected to said dialyzer means for withdrawing measured quantities of ultrafiltrate from said dialyzer means, and indicator means connected to said withdrawing means for indicating the quantity of withdrawn ultrafiltrate,

(h) said dialysis solution supply means including mixing means connected to a source of water and a source of dialysis concentrate and having an output operatively connected to said one chamber component for filling the latter,

(i) dosing means operatively connected to said mixing means for supplying said dialysis concentrate to said mixing means, said control means being also operatively connected to said dosing means for controlling the dosing means also in response to said sealing means reaching its end positions,

(j) and means operatively connected to said hemodialysis apparatus for monitoring the concentration of said dialysis solution.

4,267,041

APPARATUS FOR THE ULTRAFILTRATION CONTROL IN CONNECTION WITH THE HEMODIALYSIS

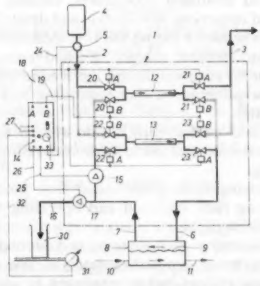
Wilfried Schael, Bad Homburg von der Hohe, Fed. Rep. of Germany, assignor to Eduard Fresenius and Chemisch-pharmazeutische Industrie KG, Apparatebau KG, Bad Homburg, Fed. Rep. of Germany

Continuation of Ser. No. 925,984, Jul. 19, 1978, abandoned. This application Oct. 10, 1979, Ser. No. 83,321

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1977, 2734561

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—109 **6 Claims**



1. An apparatus for continuously controlling the liquid flow in a single pass hemodialysis treatment system, comprising at least two elongated container means (12, 13) for the unidirectional and laminar supply of fresh dialysate and for the unidirectional and laminar discharge of used dialysate, each said

container means having a given length and a given diameter substantially smaller than the length, whereby the filling and emptying of said elongated container means advances with a unidirectional, laminar flow which moves always in the same direction in said container means, each container means having inlet means at one end thereof and outlet means at the opposite end thereof, said unidirectional flow flowing in each container from said inlet means to said outlet means during filling and during emptying, each of said inlet means and each of said outlet means comprising branching conduit means connected to the respective end of the corresponding container means, controllable valve means operatively interposed in each of said branching conduit means, dialysis liquid feeder container means (**4**) and feeder conduit means operatively connecting said feeder container means (**4**) to each inlet means through the respective valve means (**20A, 22B**) for providing fresh dialysis liquid to said inlet means, discharge conduit means (**3**) operatively connected to each of said outlet means through the respective valve means, dialyzer means (**8, 9**) having dialyzer inlet means and dialyzer outlet means for dialysis liquid, first circulatory conduit means (**6**) operatively connecting each outlet of said elongated container means through the respective valve means to the dialyzer inlet means, second circulatory conduit means (**7**) operatively connecting each inlet of said elongated container means to said dialyzer outlet means, circulatory pump means (**15**) operatively interposed in said second circulatory conduit means (**7**), said first and second circulatory conduit means (**6, 7**), said circulatory pump means (**15**) with the respective valve means and one of said container means forming a closed circulatory loop, said circulatory pump means for unidirectional pumping through said closed circulatory loop, control means (**14**), including conductor means (**18, 19**) operatively connected for controlling said controllable valve means to alternately connect said elongated container means in timed sequence into said closed circulatory loop said control means for causing at any time at least one of said elongated container means to be connected in said closed circulatory loop while at least one other elongated container means is connected between said dialysis liquid feeder container means (**4**) and said discharge conduit means so as to discharge used dialysis liquid without recirculation to said dialyzer means and for causing the reversal of said connections such that at the beginning of an operating phase at least one container is filled with fresh dialysis liquid and at least another continner is filled with used-up dialysis liquid and this filling status is reversed at the end of said operating cycle so that used-up and fresh dialysis liquid will not be mixed; branching pump means (**17**) operatively connected to said second circulatory conduit means (**7**) upstream of said circulatory pump means (**15**) for withdrawing liquid from said closed circulatory loop, liquid quantity measuring means (**30, 31**) operatively connected to said branching pump means for measuring dialysis liquid withdrawn per unit of time from said closed circulatory loop by said branching pump means, said liquid quantity measuring means producing a feedback control signal proportional to the withdrawn dialysis liquid, and closed loop feedback means (**32, 26**) operatively controlling the operation of said branching pump means in closed loop feedback fashion in response to the withdrawn proportion of dialysis liquid.

4,267,042

WATER FILTER, IN PARTICULAR FOR AQUARIUM WATER

Kurt H. Hofmann, Eulenthal, 5063 Overath, Fed. Rep. of Germany

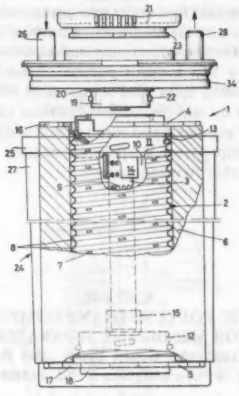
Filed Sep. 11, 1979, Ser. No. 74,714

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1978, 2843641

Int. Cl.[3] **E04H** *3/20;* **B01D** *25/06*

U.S. Cl. 210—169 **9 Claims**

1. A water filter, in particular for aquarium water, including a filter chamber having a water inlet and a water outlet said filter chamber being filled with exchangeable filter material, as well as a boost pump arranged downstream of said water outlet, wherein said filter chamber is defined by the annular space between two concentric tubes of different diameters, the outer tube being formed as a corrugated tube with helical corrugation ribs and having as said water inlet a series of perforations arranged space substantially around its entire circumference and substantially throughout its entire length, wherein the perforations are respectively disposed between the outwardly directed corrugation ribs, said outer tube being encompassed by a shell of water-permeable foam, the inner



tube being likewise provided with a series of perforations arranged substantially around its entire circumference and substantially throughout its entire length, and screw-threaded end caps screwed onto both ends of said outer tube, said end caps having radially projecting flanges, said two end caps having central locations for retaining said inner perforated tube and wherein the end cap arranged at the water outlet has a central water outlet opening in fluid tight connection with the interior of said inner tube to which is connected a water outline line, while the other end of the inner tube is closed.

4,267,043

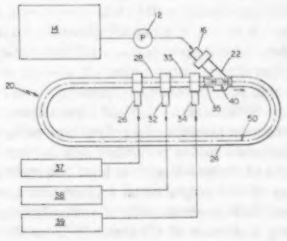
IMMISCIBLE LIQUID SEPARATING

Robert A. Benson, Cohasset, Mass., assignor to Seapower, Inc., Cohasset, Mass.

Filed Apr. 14, 1980, Ser. No. 139,839

Int. Cl.[3] **B01D** *15/00, 33/14*

U.S. Cl. 210—241 **11 Claims**



6. Immiscible liquid mixture separating apparatus, comprising

a closed loop tubular enclosure having an immiscible liquid mixture inlet, a first outlet spaced from said inlet by a driving and absorbing portion of said enclosure and a second outlet located between said first outlet and said inlet, the inner cross section area of said enclosure having

a first reduced portion located adjacent said first outlet and a second further reduced portion adjacent said second outlet

mixture input means for feeding said immiscible liquid mixture into said inlet, and

selectively absorbent compressible means within said enclosure in contact with the inner wall of said enclosure and movably mounted therein for continuous movement therearound by the force of said immiscible liquid mixture fed from said inlet in a downsteam direction from said inlet first to said first outlet and next to said second outlet

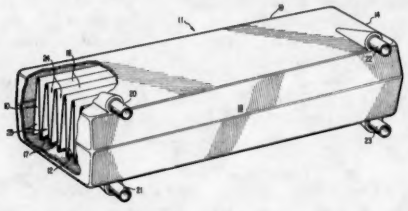
said absorbent means selectively absorbing said immiscible liquid mixture in said driving and absorbing portion and discharging first a major portion of one liquid through said first outlet upon mild compression of said compressible means by said first reduced portion and next a major portion of another liquid through said second outlet upon higher compression of said compressible means by said second further reduced portion.

4,267,044

THIXOTROPIC POLYURETHANE COMPOSITIONS AS SEALANTS FOR MEMBRANE SEPARATORY DEVICES

Thaddeus F. Kroplinski, Bound Brook, and Barton C. Case, Howell, both of N.J., assignors to NL Industries, Inc., New York, N.Y.

Filed Apr. 10, 1978, Ser. No. 894,845
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—321.2 **12 Claims**



12. A folded membrane artificial kidney comprising:

(a) a case comprised of a polymeric material selected from the group consisting of polystyrene, styreneacrylonitrile copolymers and polycarbonates;

(b) a membrane located within said case having a plurality of folds and a series of adjacent channels formed between said folds, the edge portions of each fold being sealed with the polyurethane composition of a curable nonflowing thixotropic polyurethane composition comprising:

(1) about 60% to about 20% of a prepolymer comprising the reaction product of a polyol consisting of a mixture of castor oil and a polyether diol having a molecular weight of about 400 with at least one mole per hydroxy group of said polyol of an arylene diisocyanate; and

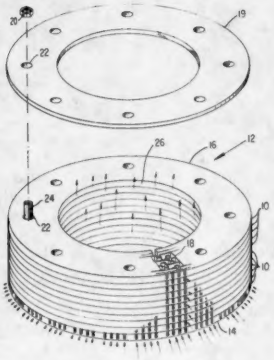
(2) about 40% to about 80% of a crosslinking agent comprising a mixture of (1) about 75% to about 99% of a polyoxypropylene triol having a molecular weight of about 3000 and being end-capped with ethylene oxide to provide above about 40% primary hydroxyl groups or a polyether tetrol; (2) about 1% to about 10% of a polyoxypropylene glycol polyamine having a molecular weight of about 230; and (3) up to about 10% of N,N,N^1,N^1,-tetrakis(2-hydroxypropyl)ethylene diamine or diisopropanol amine.

4,267,045

LABYRINTH DISK STACK HAVING DISKS WITH INTEGRAL FILTER SCREENS

Robert G. Hoof, Irvine, Calif., assignor to The Babcock & Wilcox Company, New Orleans, La.

Continuation of Ser. No. 955,050, Oct. 26, 1978, abandoned.
This application Dec. 13, 1979, Ser. No. 103,256
Int. Cl.³ B01D *25/18;* **F16K** *47/08*
U.S. Cl. 210—322 **5 Claims**



1. A device for subjecting particulate fluid flow to a labyrinth passage between the inlet and outlet of the device comprising:

a multi-turn labyrinth disk stack with integral inlet filter having a series of disks with inlet and outlet circumferences forming the inlet and outlet of said disk stack;

means for allowing fluid flow in the device to flow from the inlet circumference of the disk stack to the outlet circumference of the disk stack;

each disk of said series having a series of small area openings located around the entire inlet circumference of said disk forming an inlet filter for the particulate fluid flow through the device and leading to a large circumferential passageway;

each of said series of disks having a series of multi-turn passages located proximately to said large circumferential passageway, each multi-turn passage having a substantially constant area significantly larger than the area of each of said series of circumferential passages to prevent the blocking of the passageway by a particle of the particulate fluid flow passing through the inlet filter of said disk; and

outlet means located on each of said series of disks proximate to said multi-turn passages to exhaust the particulate fluid from the disk stack of the device.

4,267,046

METHOD AND APPARATUS FOR DEWATERING OF FINE-GRAINED MATERIALS

Stoycho M. Stoev, 51, Blvd. Kl. Gottwald; Ivan M. Sapunarov, 1, Suhodolska Str., and Vladimir K. Ivanov, 6, Blvd. Kiskinov, all of Sofia, Bulgaria

Filed Jun. 24, 1976, Ser. No. 694,241
Claims priority, application Bulgaria, Jun. 9, 1975, 30233
Int. Cl.² B01D *35/20*
U.S. Cl. 210—780 **6 Claims**

1. A method of concentrating and dewatering fine-grained materials, comprising the steps of

feeding the fine-grained material to be treated into a pressing chamber disposed in an arcuately shaped housing with an inlet and an outlet opening, wherein a sieve divides the housing into an upper pressing chamber and a lower dewatering chamber, the lowermost portion of said sieve in

said housing being disposed below said inlet and outlet openings,

imparting a vertical-elliptical oscillatory vibrating motion onto said housing, said motion having a frequency up to 160 Hz and an amplitude up to 5 mm,

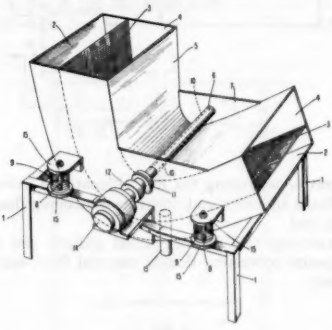
whereby said fine-grained material passes through said sieve from said pressing chamber into said dewatering chamber, and

discharging water from the dewatering chamber.

3. An apparatus for concentrating and dewatering fine-grained materials, comprising in combination,

a support frame;

an electric motor rigidly supported on said frame;



an arcuately shaped housing having an inlet and an outlet opening;

spring means supporting said housing on said frame;

a sieve mounted in said housing and dividing said housing into an upper pressing chamber and a lower dewatering chamber, the lowermost portion of said sieve in said housing being disposed below said inlet and outlet openings;

said electric motor being operatively connected to said housing so as to vibrate it at a preselected frequency and amplitude when said motor is energized; and

a discharge pipe on said housing extending from said dewatering chamber and adapted to discharge liquid therefrom.

4,267,047

DIALYZING MEMBRANE WITH ADSORBENT LAYER

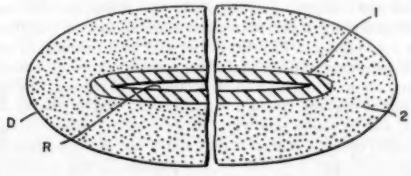
Werner Henne; Gustav Dünweg; Werner Schmitz; Raimund Pohle, and Friedrich Lawitzki, all of Wuppertal, Fed. Rep. of Germany, assignors to Akzo N.V. of Arnhem/Nederland, Arnhem, Netherlands

Division of Ser. No. 809,486, Jun. 23, 1977, Pat. No. 4,164,437. This application Apr. 16, 1979, Ser. No. 30,705

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1977, 2705734

Int. Cl.³ B01D *39/18*

U.S. Cl. 210—490 **15 Claims**



1. A dialyzing membrane for hemodialysis in the form of a hollow fiber, a tubular foil or a flat sheet formed by regeneration of cellulose from a cuprammonium solution, said membrane comprising at least two firmly self-adhered cellulosic layers with at least one of said layers being a dialyzing layer consisting essentially of a semipermeable regenerated cellulose having a thickness of about 1 to 10μ and at least one other of said layers being an adsorbent layer consisting essentially of a semipermeable regenerated cellulose having a thickness of about 10 to 100μ in which fine particles of an adsorbent material are embedded in an amount of up to 95% by weight of the adsorbent layer.

4,267,048

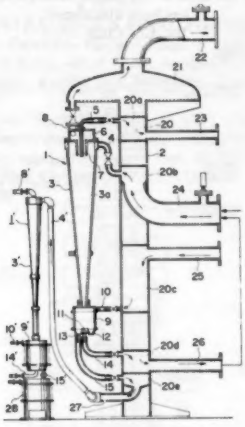
EQUIPMENT FOR SEPARATING FOREIGN MATTER FROM LIQUID PAPERMAKING MATERIALS

Saburo Ohishi, Shizuoka, Japan, assignor to Oishikikai Mfg. Co., Ltd., Shizuoka, Japan

Filed Mar. 12, 1979, Ser. No. 19,631

Int. Cl.³ B04C *5/28*

U.S. Cl. 210—512.2 **4 Claims**



1. Equipment for separating foreign matter from liquid papermaking materials including a plurality of radially disposed cyclone separators defining a single stage, each of said cyclone separators comprising a separator body to the upper portion of which a supply pipe for said materials is tangentially connected and from which an exhaust pipe for light foreign matter extends, a collecting chamber for said materials disposed at the top of said separator body out of which collecting chamber a collecting pipe extends, and a cyclone vortex chamber disposed under said separator body with a pressurized fresh water supply pipe tangentially connected to its upper portion, with a re-collecting port provided at the center of the bottom of said vortex chamber, with a portion of said bottom around said re-collecting port made lower than the recollecting port and with an outlet pipe for waste connected to said portion of said bottom; a re-collecting pipe being connected to said re-collecting port; and a hollow structure disposed at the center of the circle described by said cyclone separators and spaced equidistantly therefrom, and partitioned into an intermediate chamber for accumulating the light foreign matter, an intermediate chamber for distributing the liquid papermaking materials, an intermediate chamber for supplying pressurized clear water, an intermediate chamber for re-collection, and an intermediate outlet chamber, said first-mentioned intermediate chamber being connected both to all the exhaust pipes for the light foreign matter extending from all the cyclone separators and to a main exhaust pipe for the light foreign matter, said second-mentioned intermediate chamber being connected both to all the supply pipes for said materials extending to all the cyclone separators and a main supply pipe for said materials, said third-mentioned intermediate chamber being connected both to all

the pressurized clear water supply pipes extending to all the cyclone separators and to a main pressurized clear water supply pipe, said fourth-mentioned intermediate chamber being connected both to all the re-collecting pipes from all the cyclone separators and to a main re-collecting pipe, and said fifth-mentioned intermediate chamber being connected to all the outlet pipes from all the cyclone separators and to a common outlet pipe, said hollow structure being also provided at the top with a collecting intermediate tank.

4,267,049

BIOLOGICAL SLUDGE-ENERGY RECYCLING METHOD

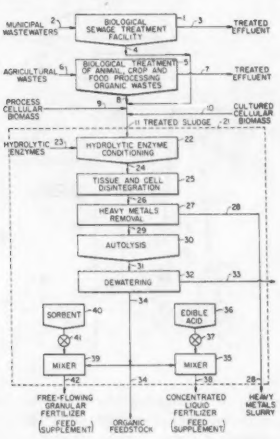
Lennart G. Erickson, 1070 E. Meadow Cir., Palo Alto, Calif. 94303, and Howard E. Worne, Lyon Industrial Pk., Route 73, Berlin, N.J. 08009

Continuation-in-part of Ser. No. 877,195, Feb. 13, 1978, Pat. No. 4,159,944. This application Jun. 27, 1979, Ser. No. 52,644

The portion of the term of this patent subsequent to Jul. 3, 1996, has been disclaimed.

Int. Cl.³ C02F *3/34*

U.S. Cl. 210—606 **31 Claims**



1. A method for converting treated sludge into useful substances, the method comprising the steps of: hydrolyzing organic materials present in the sludge by adding to the sludge at least one of hydrolytic enzymes and hydrolytic enzyme producing microorganisms; thereafter disintegrating organic cells present in the sludge into organic particles to thereby form a colloidal slurry including the particles; holding at least one of the sludge, including the enzymes or the microorganisms, and the slurry, including the particles; and thereafter separating the slurry into an effluent and a moist product including the organic particles and adapted for a relatively rapid metabolization by living organisms.

4,267,050

HIGH SOLUBILITY GAS FLOTATION IN LIQUID-SOLID SEPARATION

Richard A. Conway, and Robert F. Nelson, both of Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Mar. 21, 1979, Ser. No. 22,625

Int. Cl.³ C02F *3/12*

U.S. Cl. 210—608 **14 Claims**

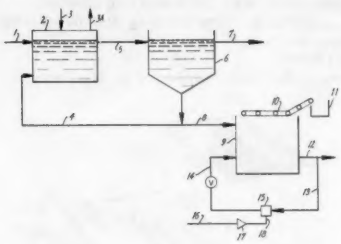
14. A method for purifying BOD-containing water comprising:

(a) subjecting said BOD-containing water to bacterial action in a bacterial treatment zone so as to produce first effluent of reduced BOD content,

(b) feeding at least part of said first effluent to a flotation zone,

(c) providing an aqueous fluid stream for pressurization,

(d) pressurizing said step (c) stream to pressure of 40–70 psig with a gas having a solubility in water higher than that of air and expanding said pressurized stream into the flotation zone,



(e) gravity separating the first effluent into lower, second effluent and overhead, impurity-containing floated material, and

(f) removing said lower, second effluent and overhead, impurity-containing floated material from said flotation zone.

4,267,051

METHOD AND APPAPARATUS FOR AERATING WATER

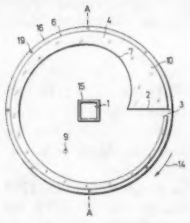
Georg Uhlmann, Koblenz, Fed. Rep. of Germany, assignor to Rheintechnik Weiland & Kaspar KG, Neunkirchen, Fed. Rep. of Germany

Filed Jun. 29, 1979, Ser. No. 53,246

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1978, 2829006

Int. Cl.³ C02F *3/04, 3/18*

U.S. Cl. 210—619 **10 Claims**



1. A method for the aeration and biological cleansing of water comprising the steps of: pushing water and air through a passage continuously converging from an inlet opening to an outlet opening; said passage being located on a rotating circular disk and comprising an annularly bent funnel thereon, said funnel extending in part above the water surface and continuously converging in direction from said inlet opening to said outlet opening; receiving said water and said air in said passage in alternation; directing said air to leave said passage through said outlet opening beneath water surface and to rise in the water; and directing said water to leave said passage through said outlet opening at least in part above said water surface for accepting oxygen from the air, said passage having a continuously reducing cross-section, whereby the water becomes accelerated and thereby compressed due to the reduction in cross-sectional area; rotating said funnel about a horizontal shaft, the outer circumference of said funnel being substantially circular-shaped and the inner circumference of said funnel is substantially spiral-shaped; arranging said outlet opening and

said inlet opening of said funnel at a substantially small distance from one another, said disk being rotatably mounted on said horizontal shaft; driving said disk on said horizontal shaft in a reservoir containing said water, said funnel being mounted on said disk at its circumference whereby a biological cover useful for cleansing the water forms on the disk and on the outer surface of the funnel.

4,267,052

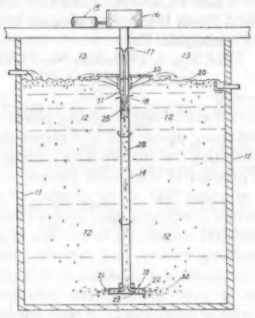
AERATION METHOD AND APPARATUS

Shih-chih Chang, 2339 Davison Ave., Richland, Wash. 99352

Filed Dec. 10, 1979, Ser. No. 101,709

Int. Cl.³ C02F *3/16*

U.S. Cl. 210—629 **6 Claims**



1. A process for mixing a gas with a liquid in a vessel comprising the steps;

a. rotating a submerged rotor in said vessel containing said liquid by driving a substantially vertically disposed hollow shaft; said rotor comprising a plurality of substantially radially outward channels of which the inward end communicating with the hollow center of said hollow shaft and the outward end being open to said liquid in said vessel;

b. continuously drawing said liquid by the pumping action of said rotor into said hollow center through at least one shaft wall opening to said liquid near the liquid surface and flowing said liquid downwardly within said hollow center;

c. continuously inducing said gas to enter said hollow center through at least one shaft wall opening for said gas above said liquid surface and mixing said gas with the flowing liquid by a hydraulic gas entrainment said hydraulic gas entrainment being accomplished by a venturi means downstream of said shaft wall opening to said liquid, said flowing liquid forming a low pressure region in said venturi means and thereby entraining gas therein through a gas tube communicating said gas entering into said hollow center with said low pressure region in said venturi means;

d. continuously injecting said flowing liquid with the entrained gas into said liquid through said channels of said rotor by the pumping action of said rotor to form a plurality of rotary jet streams of a gas-liquid mixture.

2. A process as defined in claim **1** wherein said liquid being wastewater and said gas being air.

5. An apparatus for mixing a gas with a liquid comprising a vessel for containing said liquid, prime mover disposed above said vessel for driving a substantially vertically disposed hollow shaft; the hollow center of said shaft being open to said liquid through at least one liquid opening near the surface level of said liquid and open to said gas through at least one gas opening above said surface level of said liquid, a submerged rotor being mounted on said shaft and submerged in said liquid at a desired depth; said rotor having a plurality of substantially radially outward channels of which the inward end communicating with said hollow center of said shaft and the outward end being open to said liquid in said vessel, a gas entraining means disposed in said hollow center of said hollow shaft and downstream of said liquid opening said gas entraining means comprising a venturi nozzle for producing a low pressure region therein, and a gas tube for communicating said gas entering said hollow center with said low pressure region; the pumping action of said rotor drawing said liquid of said vessel to flow in said hollow center of said shaft through said liquid opening and downwardly therein, the flowing liquid entraining said gas through said gas opening in said gas entraining means and forming a gas-liquid mixture therein, said rotor drawing said mixture to flow further downwardly in said hollow center of said shaft and subsequently injecting it in said liquid of said vessel through said channels of said rotor to form a plurality of rotary jet streams for mixing said liquid in said vessel and promoting gas-liquid mass transfer.

4,267,053

INLINE INTRAVENOUS FINAL FILTER UNIT

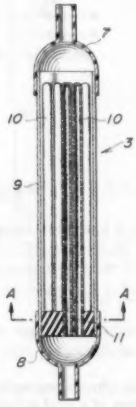
Yasuo Hashino; Fusakazu Hayano, both of Fuji, and Kazuo Toyomoto, Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha and Morishita Pharm., both of Osaka, Japan

Continuation of Ser. No. 837,208, Sep. 27, 1977, abandoned. This application Jun. 20, 1979, Ser. No. 50,444

Claims priority, application Japan, Oct. 15, 1976, 51-122876

Int. Cl.³ B01D *29/32, 31/00*

U.S. Cl. 210—650 **10 Claims**



1. A method for removing bacteria and fungi from an infusion solution in an inline intravenous final filter unit which includes a casing having an inlet at one end and an outlet at the other end thereof which comprises:

arranging a plurality of hollow fibers within the casing, each of said hollow fibers having an outside diameter of up to 3 mm, an inside diameter of at least 0.5 mm, a porous size of 0.1μ to 0.5μ and a porosity of 80% to 90% with the hollow fibers being opened at at least one end thereof;

fixing a security member to each end of said hollow fibers so as to connect said hollow fibers to each other and to abut the inner wall of the casing such that the final filter unit has a total effective filtration area of 5–100 cm^2 wherein the ratio of the total effective filtration area to the capacity of the casing is at least about 4:1; and

filtering the solution through said inline intravenous final filter unit.

5. An inline intravenous final filter unit including a casing having an inlet cap at its one end and an outlet cap at the other end thereof, a plurality of tubed filter elements arranged within the casing parallel to the longitudinal direction thereof, each of said tubed filter elements being closed at one end thereof op-

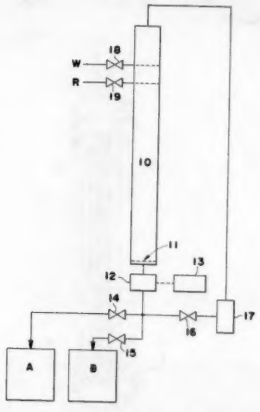
posed to the inlet cap and open at the other end thereof opposed to the outlet cap and a securing member for tightly fixing each of said tubed filter elements at the outer peripheral portion of each open end thereof to the inner wall of the casing wherein each of said tubed filter elements comprises porous hollow fiber of up to 3 mm in outside diameter and at least 0.5 mm in inside diameter, said porous hollow fiber having a porosity of 80–90% so as to be free from clogging by particulate matter in infusion solutions, a porosity rating of 0.1–0.5μ so as to suitable for the removal of bacteria or fungi contaminated thereinto and including a total effective filtration area of 5–100 cm^2 and wherein the ratio of the total effective filtration area to the capacity of the casing is at least about 4:1.

4,267,054

METHOD FOR THE CHROMATOGRAPHIC SEPARATION OF SOLUBLE COMPONENTS IN FEED SOLUTION

Kenzaburo Yoritomi; Teruo Kezuka, and Mitsumasa Moriya, all of Chiba, Japan, assignors to Sanmatsu Kogyo Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 908,455, May 22, 1978. This application Apr. 23, 1979, Ser. No. 32,723
Claims priority, application Japan, May 26, 1977, 52/62023
Int. Cl.³ B01D *15/08*
U.S. Cl. 210—659 **5 Claims**



1. A method for the chromatographic separation of each of the soluble components of a feed solution containing as major components (1) a component A which is relatively less adsorbed by a solid adsorbent having ion-exchanging or molecular sieve action and (2) a component B which is more selectively adsorbed by the solid adsorbent having ion-exchanging or molecular sieve action, said solid adsorbent having its adsorbency restored by displacing the selectively adsorbed components, said method comprising:

sequentially introducing said feed solution and a liquid desorbent into a column packed with said solid adsorbent;

thereafter separating effluent at the bottom of said column in one cycle of operation into four fractions, including

(a) a fraction rich in said component A,

(b) a mixed fraction containing both of said components A and B but with incremental increases in the concentration of said component B,

(c) a fraction rich in said component B, and

(d) a dilute fraction of the tailing edge portion of said fraction (c) and the leading edge portion of said fraction (a) in the next cycle of operation;

directly returning said fractions (b) and (d) to the top of said column;

feeding additional fresh feed solution to said column through a position on said column located at or approximately at a point where the liquid composition in said column has a maximum concentration of components A and B or the ratio of component A to component B in the liquid composition is substantially equal to that of said feed solution during effluence of said fraction (a) or (c);

feeding additional fresh liquid desorbent to said column through a position on said column located at or approximately at a point where the liquid composition in said column has a lowest concentration during effluence of said fraction (a) or (c); and separately recovering said fractions (a) and (c).

4,267,055

SEPARATION OF MORE PLANAR MOLECULES FROM LESS PLANAR MOLECULES

James W. Neely, North Wales, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Sep. 4, 1979, Ser. No. 71,808
Int. Cl.³ B01D *15/00*
U.S. Cl. 210—670 **10 Claims**

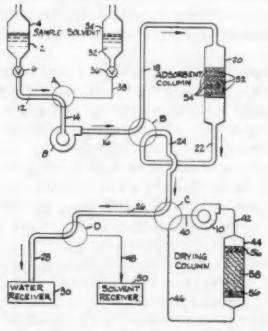
1. A process for selectively removing planar molecules from a mixture containing planar and non-planar molecules which comprises contacting the mixture with a particulate adsorbent which is the product of controlled thermal degradation, at a temperature of about 500° C. or greater, of a macroporous synthetic polymer containing macropores ranging from about 50 to about 100,000 Angstroms in average critical dimension, and a carbon-fixing moiety, and derived from one or more ethylenically unsaturated monomers, or monomers which may be condensed to yield macroporous polymers, or mixtures thereof, until planar molecules have been selectively adsorbed, and subsequently separating the adsorbent from the mixture.

4,267,056

SAMPLE PREPARATION APPARATUS AND PROCESS FOR THE USE THEREOF

Thomas D. McClure, Northglenn, Colo., assignor to Johns-Manville Corporation, Denver, Colo.

Filed Apr. 5, 1979, Ser. No. 27,332
Int. Cl.³ B01D *15/08*
U.S. Cl. 210—678 **12 Claims**



1. Apparatus for the preparation of samples for chromatographic analysis, which samples comprise organic materials initially present in a quantity of water, said apparatus comprising:

(a) at least one sample reservoir and at least one solvent reservoir, each having a fluid conduit leading therefrom;

(b) at least one adsorbent column containing at least one layer of adsorbent material and having fluid conduits at opposite ends thereof, with the fluid conduit of said adsorbent column to which a first valve means is at any given time connecting one of said reservoirs being at that time the inlet fluid conduit of said adsorbent column and the

other fluid conduit of said adsorbent column being at that time the outlet fluid conduit of said adsorbent column;

(c) at least one water receiver and at least one solvent receiver, each having a fluid conduit leading thereto;

(d) said first valve means to alternately connect each of said fluid conduits of said reservoirs to said inlet fluid conduit of said adsorbent column;

(e) second valve means to alternately connect each of said fluid conduits of said receivers to said outlet fluid conduit of said adsorbent column; and

(f) at least one drying column containing at least one layer of drying material and having respectively inlet and outlet fluid conduits at opposite ends thereof, said drying column being interposed between said adsorbent column and said second valve means and with said outlet fluid conduit of said adsorbent column connected to said inlet fluid conduit of said drying column and said outlet fluid conduit of said drying column connected to said second valve means.

4,267,057

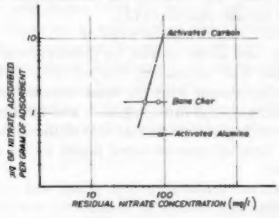
WATER TREATMENT FOR SELECTIVE REMOVAL OF NITRATES

Donald G. Hager, and Frederick Rubel, Jr., both of Tucson, Ariz., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Jan. 18, 1980, Ser. No. 113,354

Int. Cl.³ C02F *1/28*

U.S. Cl. 210—678 **11 Claims**



1. A method for treating nitrate-containing potable water for selectively removing substantially all of the nitrate present in the water comprising the steps of:

(a) controlling the pH of nitrate-containing water such that the pH is less than 8; and

(b) passing the pH-controlled water through activated carbon to remove substantially all of the nitrate initially present in the water.

4,267,058

PRECIPITATING AGENT FOR DEPHOSPHATIZING EFFLUENT

Hans Kyri, Cologne, and Jürgen Dobbers, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 20, 1979, Ser. No. 77,227

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1978, 2843053

Int. Cl.³ C02F *1/52*

U.S. Cl. 210—716 **4 Claims**

1. A process for the dephosphatization of effluent, comprising mixing the effluent having a pH of about 4.5 to 8.5 with a precipitating agent consisting essentially of about 5 to 75% by weight of active iron (III) sulphate, about 25 to 95% by weight of active iron (III) oxide and 0 to about 10% by weight of anhydrous magnesium sulphate, the active iron (III) sulphate and active iron (III) oxide having been produced by supplying oxygen while roasting iron (II) sulphate for a time insufficient to remove all the sulphate but sufficient to stop at the desired sulphate content.

4,267,059

AUXILIARY FOR IMPROVING RETENTION, DEWATERING AND WORKING UP, PARTICULARLY IN THE MANUFACTURE OF PAPER

Rudolf Behn; Lutz Hoppe, and Branislav Böhmer, all of Walsrode, Fed. Rep. of Germany, assignors to Wolff Walsrode Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 930,188, Aug. 2, 1978, abandoned. This application Oct. 15, 1979, Ser. No. 84,647

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1977, 2736651

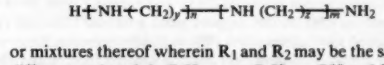
Int. Cl.³ D21H *3/52*

U.S. Cl. 210—736 **5 Claims**

1. An auxiliary for improving the retention of flushable solids, for accelerating the dewatering of suspensions and for more rapidly working up industrial waters, effluents and sludges by the addition of a basic water-soluble polymer in the form of an aqueous polymersolution said polymer being produced by reacting

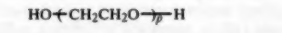
(a) an aliphatic polyethylene glycol ether amine prepared by reacting a polyethylene glycol/epihalohydrin condensate with

or a polyamine of the formula



or mixtures thereof wherein R_1 and R_2 may be the same or different and each is C_xH_{2+1} or C_xH_{2x}—OH and R_3 is H or C_xH_{2x+1} and x is an integer from 1–4, y and z are each integers of 2–4, n is an integer of 2–5 and m is an integer of 0–5; and

said condensate is the reaction product of about 2 parts epihalorhydrin per part polyethylene glycol of the formula



where p is an integer of 1–27; and

(b) a basic polyamino amide whereby the halogens of compound (a) react with the —NH moieties of the polyamino amide with elimination of hydrohalic acid to form an intermediate product; and

(c) reacting said intermediate with a member selected from the group consisting of epibromhydrin, epifluorhydrin, epichlorhydrin, dihaloalkanes, glyoxal-bis-acrylamide, bisacrylamidoacetic acid, acrylamidoglycolic acid and tetraalkyloxyethane.

5. Improving the retention of flushable solids, accelerating the dewatering of suspensions and for more rapidly working up industrial waters, effluents and sludges by adding an aqueous polymer solution of a basic water-soluble polymer according to claim 1.

4,267,060
TRAVELLING SHEET, FLAT-BED VACUUM FILTER AND METHOD

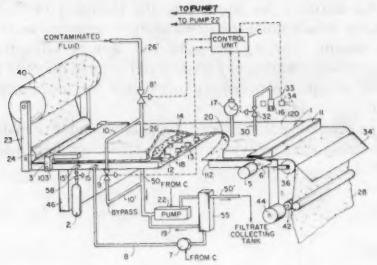
Peter A. Miller, Mozartstrasse 16, D-6370 Oberursel, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 854,192, Nov. 23, 1977, Pat. No. 4,233,157, which is a continuation-in-part of Ser. No. 466,171, Apr. 10, 1975, abandoned. This application Feb. 19, 1980, Ser. No. 123,101

The portion of the term of this patent subsequent to Nov. 11, 1997, has been disclaimed.

Int. Cl.[3] **B01D** *29/02, 29/36*

U.S. Cl. 210—741 **15 Claims**



1. In a travelling sheet, flat-bed filter apparatus to filter contaminated liquid from a contaminant supply (**26'**) and deliver filtered fluid to a filtered fluid outlet (**50'**) having

a web of filter medium (**28**);

a perforate support plate (**14**) to support the filter medium thereon;

cover means (**120**) located above the support plate (**14**) and forming therewith a contaminant chamber (**20**) which is in communication with the contaminant supply (**26'**);

a collecting pan including a bottom support plate (**12**) located beneath the support plate (**14**), having upstanding supporting rim portions (**112**), and forming with the filter medium (**28**) on the support plate a filtrate chamber (**13**);

a filtered fluid connection (**50**) in fluid communication with the filtrate chamber (**13**) and the filtered fluid outlet (**50'**);

a pump (**22**) connected in the filtered fluid connection (**50**);

and transport means (**42, 44**) in engagement with the filter medium and transporting the filter medium over the support plate (**14**) and between the contaminant chamber (**20**) and the filtrate chamber (**13**);

the improvement comprising

said cover means being a hood or cap-shaped element (**20**) positioned by gravity over said support plate (**14**) and having fixed depending rim portions (**121**) which are located to directly engage the web of the filter medium (**28**) only, said filter medium being positioned between the depending rim portions (**121**) of the cover means (**120**) and the upstanding rim portions (**112**) of the support plate (**12**);

said pump means comprising a suction-and-vacuum pump means (**22**) in operation generating sufficient vacuum in both the filtrate chamber (**13**) and the contaminant chamber (**20**) to draw said hood or cap-shaped element (**120**) into sealing engagement with the upper surface of the filter medium (**28**), the ambient atmospheric pressure at the outside of the hood or cap-shaped element pressing said hood or cap-shaped element on the filter medium (**28**) and against the upstanding supporting rim portions;

means (**17**) sensing the vacuum in the contaminant chamber (**20**);

and valve means (**8'**) interposed in the liquid supply and controllable in dependence on the vacuum sensed by the vacuum sensing means, and operative to inhibit supply of contaminated fluid to the contaminant chamber (**20**) until the vacuum, upon operation of the suction-and-vacuum pump means, has reached a predetermined level indicative of sealing engagement of the rim portions of the cover means and the collecting pan, respectively, with the filter medium interposed, and then controlling said valve means to open to admit contaminated liquid for conjoint continued application of suction by said pump means to effect said sealing engagement, draw contaminated liquid from said contaminant supply, and thus provide for supply of contaminated liquid to the contaminant chamber (**20**), sucking fluid through the filter medium (**28**), removing the filtered fluid out from the filtrate chamber (**13**) while continuing to maintain the sealing vacuum beneath the hood or cap-shaped cover means.

10. Method to operate a travelling sheet, flat-bed filter apparatus to filter contaminated liquid from a contaminant supply (**26'**) and deliver filtered fluid to a filtered fluid outlet (**50'**) and utlizing an apparatus having

a web or filter medium (**28**);

a perforate support plate (**14**) to support the filter medium thereon;

cover means (**120**) located above the support plate (**14**) and forming therewith a contaminant chamber (**20**) which is in communication with the contaminant supply (**26'**);

a collecting pan including a bottom support plate (**12**) located beneath the support plate (**14**), having upstanding supporting rim portions (**112**) and forming with the filter medium (**28**) on the support plate a filtrate chamber (**13**);

a filtered fluid connection (**50**) in fluid communication with the filtrate chamber (**13**) and the filtered fluid outlet (**50'**);

a suction-and-vacuum pump (**22**) in the filtering fluid connection (**50**); and transport means in engagement with the filter medium and transporting the filter medium over the support plate (**14**) between the contaminant chamber (**20**) and the filtrate chamber (**13**);

said method comprising the steps of

positioning said cover means, by gravity, over the support plate (**14**) with depending rim portions (**121**) thereof in direct engagement with the upper surface of the web of filter medium, and fitting against, and in alignment with, the upstanding rim portions (**112**) of the collecting pan;

inhibiting flow of contaminated liquid to the contaminant chamber;

starting said suction-and-vacuum pump, and creating a vacuum within said chambers, to draw the cover means, with the filter medium interposed, against the collecting pan, and tightly and sealingly engage said rim portions;

admitting contaminated liquid when a predetermined vacuum, indicative of sealing engagement of said rim portions, has been sensed;

continuing operation of said pump to continue to effect said sealing engagement, draw contaminated liquid from the contaminant supply, and provide supply of contaminated liquid into the contaminant chamber, suck fluid through the filter medium and remove filtered fluid from the filtrate chamber to the filtered fluid outlet.

4,267,061
PROCESS AND SEPARATING AND RECOVERING SOLIDS AND CLEAR LIQUID PHASE FROM DISPERSIONS

Thomas Simo, Frankfurt am Main, and Roland Rammler, Königstein, both of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Reuterweg, Fed. Rep. of Germany

Continuation of Ser. No. 815,465, Jul. 13, 1977, abandoned, which is a continuation of Ser. No. 647,831, Jan. 9, 1976, abandoned. This application Jan. 4, 1979, Ser. No. 1,100

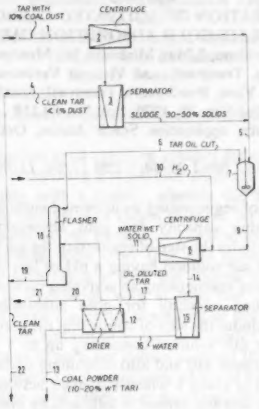
Claims priority, application Fed. Rep. of Germany, Feb. 4, 1975, 2504487

Int. Cl.[3] **B01D** *43/00*

U.S. Cl. 210—772 **4 Claims**

1. Process for separating solids from high-boiling liquid hydrocarbons, preferably high-boiling oils or tars, which comprises feeding solids-containing liquid hydrocarbons into a first separation zone, separately withdrawing from said first separation zone a solids-enriched sludge phase and a liquid hydrocar-

bon phase containing less than 1% by weight of solids with a particle size below 5 microns, reducing the density and/or the viscosity of the liquid constituents of the sludge phase by the addition of a hydrocarbon fraction obtained from high-boiling hydrocarbons withdrawn from a second separation zone, recovering the hydrocarbon fraction added to reduce the density and/or viscosity of the sludge phase in a flashing zone from the



hydrocarbons withdrawn from the second separation zone and subsequently recycled to said sludge phase, adding water to the sludge phase and feeding the resulting mixture into a centrifuging zone, separately withdrawing from said centrifuging zone a liquid phase and a high-solids phase, feeding said liquid phase to said second separation zone and separately withdrawing water and the high-boiling hydrocarbons therefrom.

4,267,062

ABANDONED BOREHOLE COMPOSITIONS

Thomas L. Byerley, Fountain Valley, Calif., assignor to NL Industries, Inc., New York, N.Y.

Continuation of Ser. No. 844,279, Oct. 21, 1977, abandoned. This application May 29, 1979, Ser. No. 42,885

Int. Cl.[3] **E21B** *33/00*

U.S. Cl. 252—8.55 R **3 Claims**

1. A process for suspending solids and controlling formation pressures within a borehole to be abandoned which comprises:

(a) preparing a composition essentially comprising about 89.5 to about 99.4% by weight water swellable clay gellant selected from the group consisting of natural and synthetic, sodium form montmorillionite, bentonite, beidellite, hectorite, saponite, stevensite, and mixtures thereof, about 0.5% to about 10% by weight water-soluble alkali metal salt selected from the group consisting of sodium and potassium carbonates, bicarbonates, citrates, oxalates, stearates, and mixtures thereof and about 0.1 to about 3.0% by weight of a water soluble, essentially non-hygroscopic salt of carboxymethylcellulose, having a degree of substitution in the range of about 0.5 to 1.5, selected from the group consisting of sodium carboxymethylcellulose, potassium carboxymethylcellulose and mixtures thereof;

(b) Mixing said composition of step (a) with fresh water to form an aqueous slurry having a gel strength of at least 20 lb/100 ft^2 and having an API filtration rate less than about 15 cc/30 minutes;

(c) Circulating said aqueous slurry throughout the total depth of said borehole and allowing said aqueous slurry to remain in the borehole.

4,267,063

AMINE DERIVATIVES OF DIALKYLPHOSPHONATE-ALKLMALEATE ESTER REACTION PRODUCTS AS ANTIWEAR/LOAD CARRYING ADDITIVES AND LUBRICANTS CONTAINING SAME

Gerassimos Frangatos, Haddonfield, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 20, 1980, Ser. No. 122,918

Int. Cl.[3] **C10M** *1/46*

U.S. Cl. 252—49.9 **8 Claims**

1. A lubricant composition comprising an oil of lubricating viscosity or a grease prepared therefrom and a minor antiwear/load-carrying amount of a product prepared by (a) reacting a dialkylphosphonate and an alkylmaleate ester and (b) converting the product of (a) to an amine derivative by reacting same with an amine selected from the group consisting of primary alkyl amines, secondary alkyl amines, primary aryl amines, secondary aryl amines and polyalkylene amines; wherein the molar ratio of dialkylphosphonate to alkyl maleate ester to amine varies from about 1:1:0.5 to about 4:1:3.

4,267,064

REFRIGERATION LUBRICATING OIL COMPOSITIONS

Umekichi Sasaki; Masaaki Tsunemi, both of Kawasaki; Kaichi Yamada, and Yoshiyuki Morikawa, both of Kadoma, all of Japan, assignors to Nippon Oil Company, Ltd. and Matsushita Electric Industrial Co., Ltd., both of, Japan

Filed Oct. 24, 1979, Ser. No. 87,675

Claims priority, application Japan, Oct. 25, 1978, 53-131200

Int. Cl.[3] **C09K** *15/06;* **C10M** *3/20, 3/22*

U.S. Cl. 252—52 A **5 Claims**

1. A refrigeration lubricating oil composition which comprises:

a starting polyglycol oil (A) having a kinetic viscosity in the range of 25-50 cSt at 98.9° C. and a viscosity index of greater than 150, the polyglycol oil being represented by the formula

$$R_1\text{+}O\text{—}(R_2O)_m\text{—}R_3\text{ }]_n$$

wherein R_1 and R_3 each are a hydrogen atom, hydrocarbon radical or acyl group and may be identical with, or different from, each other; R_2 is an alkylene group; n is an integer of 1–6; and m×n is 2 or greater; and

an additive (B) selected from the group consisting of glycidyl ether type epoxy compounds (1), epoxidized fatty acid monoesters (2) and epoxidized vegetable oils (3), the additive (B) being in the range of 0.1–10 percent by weight of the total weight of components (A) and (B).

4,267,065

DISPERSANTS FOR A CERAMIC SLURRY

David W. Johnson, Jr., Pluckemin, and Eva M. Vogel, Berkeley Heights, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 1, 1978, Ser. No. 929,930

Int. Cl.[3] **C04B** *35/38;* **C09C** *1/24, 1/04*

U.S. Cl. 252—62.62 **4 Claims**

1. A method of processing ceramics which comprises forming a slurry and spray drying said slurry under conventional conditions to yield a product consisting of ceramic material and a dispersant said ceramic material forming between 65 percent and 80 percent by weight of said slurry and being a mixture of metal oxides suitable for forming a ferrite

CHARACTERIZED IN THAT

said dispersant is ammonium citrate having a concentration of 0.02 to 0.8 percent by weight of the ceramic material.

4,267,066

PROCESS FOR AUGMENTING OR ENHANCING THE AROMA OF DETERGENT USING DERIVATIVES OF CIS-3-HEXENOL

Cynthia J. Mussinan, Bricktown; Braja D. Mookherjee, Holmdel; Manfred H. Vock, Locust; Frederick L. Schmitt, Holmdel; Edward J. Granda, Englishtown; Joaquin F. Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 85,707, Oct. 17, 1979, Pat. No. 4,241,098. This application Jul. 17, 1980, Ser. No. 169,812

Int. Cl.³ C11D *3/50, 9/44*

U.S. Cl. 252—174.11 **1 Claim**

1. A process for augmenting or enhancing the aroma of a solid or liquid anionic, cationic or nonionic detergent comprising the step of intimately admixing with a solid or liquid anionic, cationic or nonionic detergent base from 0.01% up to 0.5% of at least one substance selected from the group consisting of:

A. A composition of matter consisting essentially of cis-3-hexenal, cis-3-hexenyl-cis-3-hexenoate, trans-2-hexenal, and cis-3-hexenol;

B. A composition of matter consisting essentially of cis-3-hexenal, cis-3-hexenyl-cis-3-hexenoate, cis-3-hexenyl formate and trans-2-hexenal;

C. A composition of matter consisting essentially of cis-3-hexenal, cis-3-hexenyl-cis-3-hexenoate, cis-3-hexenol, cis-3-hexenyl formate and trans-2-hexenal; and

D. Cis-3-hexenyl methyl ether.

4,267,067

PROCESS FOR AUGMENTING OR ENHANCING THE AROMA OF A DETERGENT USING 2-OXABICYCLOOCTANE DERIVATIVE

Mark A. Sprecker, Sea Bright; Frederick L. Schmitt, Holmdel; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 77,539, Sep. 21, 1979, which is a continuation-in-part of Ser. No. 953,128, Oct. 20, 1978, Pat. No. 4,195,099. This application Aug. 7, 1980, Ser. No. 176,093

Int. Cl.³ C11D *3/50, 9/44*

U.S. Cl. 252—174.11 **1 Claim**

1. A process for augmenting or enhancing the aroma of a solid or liquid anionic, cationic or nonionic detergent comprising the step of adding to a solid or liquid anionic, cationic or nonionic detergent base from 0.01% up to 0.5% of 1,3,5,5-tetramethyl-2-oxabicyclo[2.2.2]octane having the structure:

4,267,068

STORAGE-STABLE, POURABLE SILICATE SUSPENSIONS

Paul Diessel, Mannheim; Johannes Perner, Neustadt; Bernd Leutner, Frankenthal, and Hans-Ulrich Schlimper, Speyer, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed May 22, 1979, Ser. No. 41,523

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1978, 2824443

Int. Cl.³ C11D *3/12*

U.S. Cl. 252—179 **4 Claims**

1. A storage-stable, pourable and pumpable aqueous suspension which contains, based on the weight of suspension, from 20 to 60% of finely divided, water-insoluble sodium aluminum silicates, together with an organic acid or salt thereof as a stabilizer and flow improver, wherein the organic acid or salt thereof is exclusively one or more hydroxyl-free saturated or unsaturated dicarboxylic acids of 3 to 10 carbon atoms or alkali metal salts thereof, present in an amount of from 0.5 to 15%, based on the weight of the suspension.

4,267,069

REGENERATION OF ACTIVATED CARBON TO INCREASE ITS GOLD ADSORPTION CAPACITY

Raymond J. Davidson, 5 Max Michaelis St., Montgomery Park, Johannesburg, Transvaal, and Vittorio Veronese, 19 Lewis Dr., Horizon View, Roodepoort, Transvaal, South Africa

Filed Sep. 28, 1979, Ser. No. 80,158

Claims priority, application South Africa, Oct. 18, 1978, 78/5864

Int. Cl.³ B01J *20/34;* **C22B** *11/04, 11/08*

U.S. Cl. 252—412 **17 Claims**

1. A method of regenerating an activated carbon which has had its collecting capacity for gold adsorption reduced through use, includes the step of contacting the carbon with an aqueous copper salt solution having a pH of less than 6.

10. A method of regenerating an activated carbon which has had its collecting capacity for gold adsorption reduced through use, includes the step of contacting the carbon with an aqueous copper salt solution containing up to 5 percent by weight of the copper salt and also containing carbonic acid.

13. A method of claim **1** wherein contact between the copper salt solution and the carbon is followed by contacting the carbon with a suitable carbonate or bicarbonate solution.

4,267,070

CATALYST FOR THE SYNTHESIS OF AROMATIC MONOISOCYANATES

Boris K. Nefedov, ulitsa Shosseinaya, 9 kv. 64; Vladimir I. Manov-Juvensky, ulitsa Angarskaya, 1, korpus 3, kv. 72, both of Moscow; Jury I. Dergunov, prospekt Pobedy, 3, kv. 39; Anatoly I. Rysikhin, prospekt Pobedy, 3, kv. 7, both of Dzerzhinsk Gorkovskoi oblasti, and Alexandr L. Chimishkian, Volgogradsky prospekt, 153, korpus 1, kv. 14, Moscow, all of U.S.S.R.

Filed Oct. 30, 1979, Ser. No. 89,300

Int. Cl.³ B01J *31/02;* **C07C** *118/06*

U.S. Cl. 252—429 R **5 Claims**

1. A catalyst for the synthesis of aromatic monoisocyanates consisting of 1.64 to 16.6% by weight of palladium chloride, 0.16 to 47.6% by weight of an oxide of a metal of Group V B of the periodic system, 1.5 to 81.8% by weight of an oxide of a metal of Group VI B of the periodic system, 1.64 to 89.8% by weight of pyridine or an alkyl-substituted pyridine.

4,267,071

CATALYST FOR HYDROTREATING RESIDUAL PETROLEUM OIL

Stephen B. Jaffe, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 8, 1977, Ser. No. 822,495

Int. Cl.³ B01J *21/04, 23/84, 23/88, 27/04*

U.S. Cl. 252—439 **7 Claims**

1. A method of making a porous catalyst for hydrotreating residual petroleum oil in contact with hydrogen comprising:

measuring the size distribution of sulfur, nickel and vanadium-containing molecules in said residual oil,

determining from said measured size distribution the pore size distribution of a catalyst producing desired demetalization and desulfurization of said residual oil for specified process condition, and

producing an alumina having deposited thereon an oxide or a sulfide of a group VI-B metal and an iron group metal thereby forming said catalyst, said catalyst having a determined pore size distribution.

4,267,072

CATALYTIC CRACKING CATALYST WITH REDUCED EMISSION OF NOXIOUS GASES

Iacovos A. Vasalos, Downers Grove, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 20,634, Mar. 15, 1979, Pat. No. 4,206,039, which is a division of Ser. No. 748,556, Dec. 8, 1976, Pat. No. 4,153,534, which is a continuation-in-part of Ser. No. 642,542, Dec. 19, 1975, abandoned. This application Aug. 6, 1979, Ser. No. 63,704

The portion of the term of this patent subsequent to Aug. 19, 1997, has been disclaimed.

Int. Cl.[3] **B01J** *29/06*

U.S. Cl. 252—455 Z **11 Claims**

1. A composition of matter comprising a particulate physical mixture of:

(a) a particulate solid cracking catalyst for cracking hydrocarbons comprising a crystalline aluminosilicate zeolite in association with a matrix, wherein the amount of said cracking catalyst is in excess of about 30 weight percent with respect to the particulate physical mixture; and

(b) a particulate solid other than said particulate cracking catalyst comprising at least one sodium containing compound in association with at least one inorganic oxide selected from the group consisting of silica and alumina, wherein the amount of sodium, calculated as the metal, is from about 50 parts per million to about 10 weight percent with respect to said particulate physical mixture, and said particulate solid other than cracking catalyst is substantially free of crystalline aluminosilicate zeolite.

2. The composition as set forth in claim **1** wherein the amount of sodium, calculated as the metal, is from about 0.6 to about 3 weight percent with respect to said particulate physical mixture.

3. The composition as set forth in claim **2** wherein said inorganic oxide is alumina.

4,267,073

ETHYLENE OXIDE CATALYST

Robert P. Nielsen, and Albert A. Jecminek, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 916,437, Jun. 19, 1978, abandoned, and a continuation-in-part of Ser. No. 816,569, Jul. 18, 1977, abandoned, which is a continuation of Ser. No. 652,603, Jan. 26, 1976, abandoned. This application Dec. 17, 1979, Ser. No. 104,229

Int. Cl.[3] **B01J** *23/08, 23/66*

U.S. Cl. 252—455 R **28 Claims**

1. A catalyst for the production of ethylene oxide by the controlled incomplete oxidation of ethylene with molecular oxygen which comprises a porous refractory support having deposited on its exterior and interior pore surfaces metallic silver and compounds of thallium wherein the silver ranges from about 1 percent to about 25 percent by weight and the thallium concentration ranges from about 0.5×10^{-3} to about 1.5×10^{-3} gram atomic weight per kilogram (gaw/kg) of total catalyst.

7. The catalyst of claim **1** wherein the support comprises siliceous material.

8. A catalyst for the production of ethylene oxide by the controlled incomplete oxidation of ethylene with molecular oxygen consisting essentially of a porous alpha alumina support having a surface area of from about 0.03 m^2/g to about 5 m^2/g and having deposited on its exterior and pore surfaces from about 1 to about 25 percent by weight of silver and from about 0.5×10^{-3} to about 1.5×10^{-3} gaw/kg of total catalyst of thallium.

4,267,074

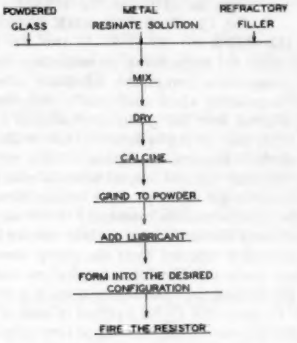
SELF SUPPORTING ELECTRICAL RESISTOR COMPOSED OF GLASS, REFRACTORY MATERIALS AND NOBLE METAL OXIDE

Curtis L. Holmes, Elkhart, Ind.; William M. Faber, Sr., Plano, Tex.; Gaylord L. Francis, Morristown, N.J., and Otis F. Boykin, Chicago, Ill., assignors to CTS Corporation, Elkhart, Ind.

Continuation of Ser. No. 506,449, Oct. 24, 1965, abandoned, which is a continuation of Ser. No. 169,355, Jan. 29, 1962, abandoned. This application Oct. 5, 1977, Ser. No. 839,756

Int. Cl.[3] **H01B** *1/00*

U.S. Cl. 252—514 **6 Claims**



1. An electrical resistor comprising a composition having a glass, at least 0.2 percent by weight of the total composition being a noble metal selected from the group consisting of iridium and ruthenium, said noble metal provided as a pyrolytically decomposable organo-metallic composition calcined to effect iridium oxide or ruthenium oxide and dispersed through the composition, and 30 percent to 70 percent by weight of the total composition of a finely divided refractory filler oxide selected from the group consisting of alumina and silica, the glass bonding the finely divided refractory filler oxide together, the refractory filler oxide being uniformly dispersed in the composition, said composition attaining consistent electrical resistor properties.

4,267,075

PERFUME COMPOSITIONS CONTAINING ESTERS OF 3,5,5-TRIMETHYLHEXANOIC ACID

Ulf-Armin Schaper, Düsseldorf; Jens Conrad, Hilden, and Klaus Bruns, Krefeld-Traar, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Dec. 13, 1978, Ser. No. 969,205

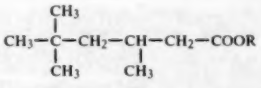
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1977, 2757559

The portion of the term of this patent subsequent to Dec. 21, 1995, has been disclaimed.

Int. Cl.[3] **C11B** *9/00;* **A61K** *7/46*

U.S. Cl. 252—522 R **5 Claims**

1. A perfumery composition comprising from 1% to 50% by weight of an ester of 3,5,5-trimethylhexanoic acid of the formula



wherein R is a member selected from the group consisting of alkyl having from 1 to 5 carbon atoms, alkenyl having from 3

to 5 carbon atoms and alkynyl having from 3 to 5 carbon atoms, and the remainder customary constituents of perfumery compositions.

4,267,076

PREPARATION OF A CARYOPHYLLENE ALCOHOL MIXTURE IN PERFUME COMPOSITIONS

Braja D. Mookherjee, Holmdel; Cynthia J. Mussinan, Bricktown; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J.; Jacob Kiwala, Brooklyn, N.Y., and Frederick L. Schmitt, Holmdel, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 947,186, Sep. 29, 1978. This application Dec. 21, 1979, Ser. No. 105,924

Int. Cl.³ C11B *9/00*; A11K *7/46*

U.S. Cl. 252—522 R **1 Claim**

1. A process for augmenting or enhancing the aroma of a perfume composition comprising intimately admixing with a perfume composition which additionally comprises at least one material selected from the group consisting of hydrocarbons, alcohols other than caryophyllene alcohols or dihydro caryophyllene alcohols ketones, aldehydes, nitriles, esters, lactones, synthetic essential oils and natural essential oils, from 0.005% up to 70% by weight of the perfume composition prepared by the process which consists essentially of the steps of (i) intimately admixing aluminum isopropylate, toluene and a caryophyllene derivative selected from the group consisting of caryophyllene oxide and dihydro caryophyllene oxide to form a mixture; (ii) heating the resulting mixture at a temperature of from 100° C. up to 150° C. for a period of time of from 1 up to 5 hours; and (iii) recovering rearranged caryophyllene oxide or dihydro caryophyllene oxide, a mixture of alcohols, from the reaction mass; the concentration of aluminum isopropylate catalyst in the reaction mass varying from about 0.025 molar up to about 0.75 molar and the concentration of caryophyllene oxide or dihydro caryophyllene oxide in the reaction mass varying from about 0.25 molar up to about 1.00 molar.

4,267,077

DETERGENT COMPOSITION FOR DRY CLEANING

Yukihisa Niimi, Sakura, and Katsumi Saegusa, Funabashi, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

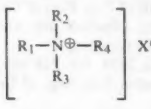
Filed Feb. 12, 1979, Ser. No. 11,753

Claims priority, application Japan, Feb. 15, 1978, 53-16318

Int. Cl.³ C11D *1/65, 7/28, 7/50*

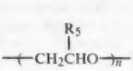
U.S. Cl. 252—545 **10 Claims**

1. A homogeneous, stable, liquid, detergent composition for dry cleaning consisting essentially of (A) 5 to 60% by weight of at least one quaternary ammonium salt of the formula (1):



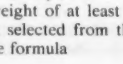
(1)

wherein R_1 is alkyl having 12 to 22 carbon atoms, R_2 and R_3, which are the same or different, each is alkyl having 1 to 3 carbon atoms or



in which R_5 is hydrogen or methyl and n is an integer of from 1 to 3, R_4 is the same as R_2 or alkyl having 12 to 22 carbon atoms, and X is a halogen or monoalkyl sulfate group having 1 to 3 carbon atoms in the alkyl,

(B) 1 to 50% by weight of at least one anionic surfactant alkanolamine salt selected from the group consisting of compounds of the formula



(2)

wherein R_6 is alkyl having 10 to 20 carbon atoms, R_5 is hydrogen or methyl, m is an integer of from 0 to 5, and M is an alkanolamine counter ion derived from an alkanolamine having a boiling point higher than 200° C., and compounds of the formula

(3)

wherein R_7 is alkyl having 8 to 20 carbon atoms, Ar is phenylene or naphthylene, and M is said alkanolamine counter ion, and

(C) 5 to 80% by weight % of a dry cleaning solvent selected from the group consisting of tetrachloroethylene, trichloroethylene, trichloroethane, trifluorotrichloroethane and petroleum dry cleaning solvent, the weight ratio of component (A) to component (B) being in the range of from 100/5 to 100/60.

4,267,078

PROCESS FOR EASILY DEGRADING WASTE CONSISTING OF THE REACTION PRODUCTS OF ORGANIC COMPOUNDS CONTAINING ISOCYANATE GROUPS WITH ALCOHOLS AND/OR WATER

Werner Lidy, Essen; Gerd Rossmy, Haltern-Lavesum, and Hans-Joachim Kollmeier, Essen, all of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Jul. 5, 1979, Ser. No. 55,075

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1978, 2834431

Int. Cl.³ C08J *11/00*

U.S. Cl. 260—2.3 **3 Claims**

1. A process for easily degrading waste composed of the reaction products of organic compounds containing isocyanate groups with alcohols or water, consisting essentially of mechanically comminuting the waste, reacting at least 20% by weight of an alkylene oxide selected from the group consisting of ethylene oxide, propylene oxide and mixtures thereof, based on the total weight of the waste, with the waste in a closed reactor at temperatures of from 120° C. to 200° C., and then removing any unreacted alkylene oxide.

4,267,079

CURED RUBBER SKIM COMPOSITIONS EXHIBITING BETTER HUMIDITY AGED METAL ADHESION AND METAL ADHESION RETENTION

James A. Davis, Uniontown, and Robert C. Koch, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Nov. 13, 1979, Ser. No. 93,463

Int. Cl.³ C08L *15/02*

U.S. Cl. 260—3.5 **4 Claims**

1. In a cured rubber skim stock composition containing natural rubber, having better adhesion and adhesion retention with metallic reinforcement embedded therein, the improvement wherein:

from about 5 to about 25 parts by weight of Neoprene is incorporated replacing an equivalent amount of the natural rubber.

4,267,080

POLYETHYLENE COMPOSITION FOR ROTATIONAL MOLDING

Takayuki Yokoyama, Tokyo; Yoshiaki Nakayama, Moriyama, and Yasuo Yasuda, Kawasaki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 28, 1979, Ser. No. 79,743

Claims priority, application Japan, Oct. 19, 1978, 53-127819

Int. Cl.[3] C08L *23/06, 23/08, 23/28*

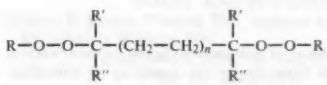
U.S. Cl. 260—4 R 9 Claims

1. An ethylene polymer composition for rotational molding consisting essentially of

(a) an ethylene polymer containing at least 85% by weight of ethylene,

(b) 5 to 50% of an elastomer based on the weight of (a),

(c) a crosslinking agent of the formula:



(1) or

(2)

wherein n is 1 or 2, R is a tertiary alkyl group, and R′ and R″ each independently is an alkyl group, and (d) 50 to 500% based on the weight of (c) of at least one crosslinking aid selected from group consisting of 1,2-polybutadiene, triallyl cyanurate and triallyl isocyanurate.

4,267,081

HIGH SOLIDS POLYURETHANE COATINGS

James A. Seneker, Anaheim, Calif., assignor to Ameron, Inc., Monterey Park, Calif.

Filed Oct. 23, 1978, Ser. No. 953,696

Int. Cl.[2] C09D *3/64, 3/66, 3/72*

U.S. Cl. 260—22 TN 30 Claims

1. A high solids polyol-containing component for reaction with an isocyanate-containing component for preparation of polyurethane resins, the polyol-containing component comprising the condensation product of:

(a) from about 70 to about 90 parts by weight castor oil;

(b) from about 5 to about 20 parts by weight pentaerythritol; and

(c) from about 5 to about 30 parts by weight of a condensation agent having a molecular weight of less than about 400 and selected from the group consisting of polycarboxylic acids having up to about 4 carboxyl groups, methyl and ethyl esters of such polycarboxylic acids, and combinations thereof,

wherein the solids content of the polyol-containing component is at least about 60% by weight, and the component has an average of at least 3 hydroxyl groups per molecule.

4,267,082

AIR-CROSS-LINKABLE POLYACRYLATE LACQUER BINDERS CONTAINING CHEMICALLY FIXED WOOD PRESERVATIVES

Rolf Dhein, Krefeld; Gerswid Poetter, Rheinberg, and Hans Rudolph, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 30, 1979, Ser. No. 34,551

Claims priority, application Fed. Rep. of Germany, May 3, 1978, 2819340

Int. Cl.[3] C09D *3/28, 3/80, 5/14*

U.S. Cl. 260—23 AR 3 Claims

1. An air cross-linkable lacquer binder comprising a copolymer of copolymerised units of from 10 to 40% by weight of glycidyl acrylate, glycidyl methacrylate or a mixture thereof, and 70 to 10% by weight of at least one other vinyl monomer which has been reacted with, based in each case on the quantity of lacquer binder, from 0.01 to 30% by weight of at least one wood preservative having at least one glycidyl-reactive phenolic hydroxyl group and from 20 to 60% by weight of at least one air-drying natural or isomerised fatty acid and from 0 to 10% by weight of a dicarboxylic acid anhydride, said lacquer binder having an average molecular weight M_n of from 1500 to 15,000 measured in tetrahydrofuran by determining the lowering of vapor pressure and an acid number of 3 to 15.

4,267,083

HEAT-STABILIZED VINYL CHLORIDE POLYMERS

Jean-Claude Torloting, Saint-Auban, France, assignor to Rhone-Poulenc Industries, Paris, France

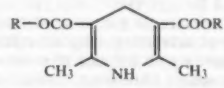
Filed May 11, 1979, Ser. No. 38,138

Claims priority, application France, May 12, 1979, 78 15156

Int. Cl.[3] C08K *5/34*

U.S. Cl. 260—23 XA 17 Claims

1. In a composition of matter comprising a vinyl chloride polymer and a heat-stabilizing amount of divalent metal salts of aliphatic or aromatic carboxylic acids or of phenols, the improvement which comprises, as a co-stabilizer therefor, a heat-stabilizing amount of (i) at least one organic β-diketone having the structural formula $R_1—CO—CHR_3—CO—R_2$ and (ii) a substituted dihydropyridine having the structural formula:



in which formulae R is alkyl or alicyclic having up to 20 carbon atoms, or phenyl, each R_1 and R_2, which can be identical or different, is a member selected from the group comprising hydrogen, a linear or branched chain alkyl or alkenyl radical having up to 36 carbon atoms, an aralkyl radical having from 7 to 36 carbon atoms, and an aryl or cycloaliphatic radical having up to 14 carbon atoms, with the proviso that R_1 and R_2 cannot both be hydrogen, and R_3 is hydrogen or —CO—X, wherein X is R, or —NH—Y, with Y being aryl, as above defined.

4,267,084

VINYL CHLORIDE POLYMER BLEND COMPOSITION

Yukio Mizutani; Katsuo Mitani, and Takashi Maehara, all of Tokuyama, Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Yamaguchi, Japan

Filed Oct. 2, 1979, Ser. No. 81,070

Claims priority, application Japan, Oct. 3, 1978, 53-121175

Int. Cl.[3] C08L *27/06*

U.S. Cl. 260—23 XA 18 Claims

1. A vinyl chloride polymer composition comprising an intimate mixture of a first vinyl chloride polymer containing a sulfide linkage and a hydroxyl group in the molecular chain, which is obtained by radical polymerization in the presence of, as a chain transfer agent, a mercaptoalkanol compound containing 2 or 3 carbon atoms, and a second vinyl chloride polymer having a higher molecular weight than the first polymer.

4,267,085

INJECTION MATERIALS FOR RAILROAD TRACK BEDS

Yasuo Katoh; Hideo Kakegawa, both of Tokyo; Shigeyuki Hayashi, Kawasaki, and Tadakazu Yamashita, Yokohama, all of Japan, assignors to Japanese National Railways and Nippon Oil Company, Ltd., both of Tokyo, Japan

Continuation-in-part of Ser. No. 708,117, Jul. 23, 1976, abandoned. This application Mar. 29, 1979, Ser. No. 25,056

Int. Cl.[3] C08F *45/52;* C08L *91/00;* B44D *1/02*

U.S. Cl. 260—28.5 AS 4 Claims

1. An injection material for railroad track bed and having a

compressive stress at 10% strain of 0.4–30 Kg/Cm^2 at a compressive strain at 40° C. of 1.5% per minute upon being cured, said injection material consisting of a member selected from (A) a composition of (a) 97–60 wt. % of blown asphalt having a penetration number of 10–30 at 25° C. and (b) 3–40 wt. % of (i) a paraffin wax having a melting point of 35°–200° C. or (ii) a microcrystalline wax having a melting point of 35°–200° C. and/or (iii) a low molecular weight C_{2-4} polyolefin having an average molecular weight of 500–8000 and a melt flow index of 0.1–100,000; and (B) a blend of (c) 99–80 wt. % of said composition (A) with (d) 1–20 wt. % of an ethylene-vinyl acetate copolymer having a melt flow index of 0.1–400 and a vinyl acetate content of 5–35 wt. % based on the total amount of the copolymer.

4,267,086
SACRAFICIAL BINDERS FOR MOLDING PARTICULATE SOLIDS

Robert A. Pett, Franklin; S. Burhan A. Qaderi, Livonia, both of Mich., and Ronald J. Tabar, Amherst, Mass., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 908,863, May 23, 1978, abandoned, which is a division of Ser. No. 810,458, Jun. 27, 1977, Pat. No. 4,158,688, which is a continuation-in-part of Ser. No. 644,400, Jan. 7, 1976, abandoned. This application Oct. 17, 1979, Ser. No. 86,002

Int. Cl.³ C08L *91/00*

U.S. Cl. 260—28.5 R **9 Claims**

1. A moldable mixture for preparing sintered solids, comprising a mixture of sinterable particulate solids and a binder composition comprising an intimate mixture of about 10 to about 90 parts by weight of resinous material and about 90 to about 10 parts by weight of a plasticizer for said resinous material wherein

(1) said resinous material is a block polymer having the structural formula

$$X\text{-}\left[B\ (AB)_{\eta}A\right]_{\eta'}$$

wherein "η" is 0 or a positive integer, "η'" is a positive integer greater than 2, "A" is a linear or branched polymer that is glassy or crystalline at 20°–25° C. and has its softening point in the range of about 80° C. to about 250° C. and "B" is a polymer of different chemical composition than A that behaves as an elastomer at temperatures between 5° C. below the softening point of A and about 120° C. above the softening point of A, and "X" is a multifunctional linking compound, A or B, and

(2) said plasticizer is selected from the group consisting of

(a) an oil at least 75 percent by weight of which boils in the range of about 550° F. to about 1038° F., has viscosity at 210° F. in the range of about 30 to about 220 Saybolt Universal Seconds and aniline point in the range of about 170° F. to about 255° F.,

(b) a wax melting at a temperature in the range of about 130° F. to about 170° F. at least 75 percent by weight of which boils at temperatures in the range of about 600° F. to about 900° F., and

(c) an oil in accordance with (a) and a wax in accordance with (b).

4,267,087
PERFLUOROALKYL SUBSTITUTED ANHYDRIDES AND POLYACIDS, AND DERIVATIVES THEREOF

Karl F. Mueller, New York, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 828,461, Aug. 29, 1977, Pat. No. 4,153,590, which is a division of Ser. No. 646,689, Jan. 5, 1976, Pat. No. 4,058,537. This application Feb. 16, 1979, Ser. No. 12,611

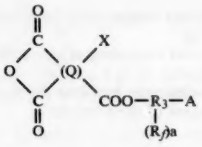
Int. Cl.³ C08L *63/00*

U.S. Cl. 260—29.2 EP **10 Claims**

1. A method for improving the coating of substrates by a water based coating formulation of a water soluble, crosslinkable resin containing polyethylene oxide segments as water solubilizing units and being derived from diepoxides, said formulation containing an ionic fluorinated surfactant, which comprises

adding an effective amount of a water-soluble or water-dispersible, resin-compatible product obtained by reacting

(a) an R_f containing anhydride of the formula I



(I)

wherein

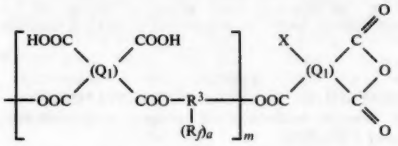
Q is a tetraradical of a tricarboxylic or tetracarboxylic acid selected from the group consisting of trimellitic acid, 3,3',4,4'-benzophenonetetracarboxylic acid and 1,2,4,5-benzenetetracarboxylic acid,

X is hydrogen or carboxy;

R_f is perfluoroalkyl of 6 to 18 carbon atoms;

a is 1 or 2;

A is hydrogen or group II;

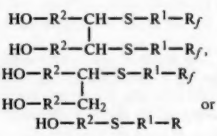


(II);

m is 0;

Q_1 is the same as Q, and

R^3 is the residue of an R_f substituted aliphatic alcohol or diol of the structure



where R^1 is a branched or straight chain alkylene of 1 to 12 carbon atoms, alkylenethioalkylene of 4 to 12 carbon atoms, alkyleneoxyalkylene of 4 to 12 carbon atoms or alkyleneiminoalkylene of 4 to 12 carbon atoms where the nitrogen atom contains as the third substituent hydrogen or alkyl of 1 to 6 carbon atoms; and

R^2 is straight or branched chain alkylene of 1 to 12 carbon atoms or an alkylenepolyoxyalkylene of the formula $C_nH_{2n}(OC_kH_{2k})_r$ where n is 1 or 12, k is 2 to 6 and r is 1 to 40; with

(b) a tertiary amine containing compound selected from the group consisting of N,N-dimethylpropane-1,3-diamine; N-methyl-di-(3-aminopropyl)amine; 1,4-bis(3-aminopropyl)piperazine; N,N-diethylpropane-1,3-diamine; N,N,N'-trimethyl-1,2-ethylenediamine; and n-(3-aminopropyl)morpholine; in the ratio of one mole of the tertiary amine containing compound (b) used for each mole of anhydride group of R_f containing compound (a); with the mol ratio of carboxy/R_f groups in the product being 1 to 4; to said formulation.

4,267,088

SOLVENT RESISTANT INKS AND COATINGS

Paul S. Kempf, P.O. Box 690, Solana Beach, Calif. 92075, assignor to Paul S. Kempf, Trustee or Successor Trustee

Filed Sep. 13, 1979, Ser. No. 74,980

Int. Cl.³ C08L *79/00, 63/00*

U.S. Cl. 260—29.2 EP **6 Claims**

1. A composition for depositing an organic solvent-resistant, water-removable coating comprising a solution in water of from about 3.2 to about 6.9 parts by weight of an epichlorhydrin-modified polyethylenimine (I) and one part by weight of an ethylene oxide-modified polyethlenimine (II).

4,267,089

ADHERENT, FLAME-RESISTANT ACRYLIC DECORATIVE COATING COMPOSITION FOR WALL BOARD AND THE LIKE

William F. Brown, Wausau, Wis., assignor to Weston Research Corporation, Wausau, Wis.

Filed Nov. 9, 1978, Ser. No. 959,309

Int. Cl.³ C08L *33/08*

U.S. Cl. 260—29.6 MM **3 Claims**

1. A coating composition for covering the surface of a substrate and providing an adherent, flame-resistant coating thereon comprising an aqueous dispersion containing nepheline syenite, aluminum hydrate, sodium silicate, wollastonite, titanium dioxide, an acrylic resin, zinc oxide, and hydrated magnesium aluminum silicate.

4,267,090

PROCESS FOR PREPARING VINYL ACETATE-ETHYLENE COPOLYMER LATICES

Manfred Heimberg, Cincinnati, and Louis J. Rekers, Wyoming, both of Ohio, assignors to National Distillers and Chemical Corp., New York, N.Y.

Filed Jan. 22, 1979, Ser. No. 5,070

Int. Cl.³ C08L *23/08, 31/04*

U.S. Cl. 260—29.6 R **8 Claims**

1. A process for preparing vinyl acetate-ethylene copolymer latices having an inherent viscosity of not less than about 1.90 measured upon solution of 0.250 gm of latex in 50–75 ml of 80% weight aqueous acetic acid heated to 50°–60° C., and demonstrating superior performance in the Time of Set Test and Vinyl Wetting Test which comprises copolymerizing from about 60% to about 95% by weight of vinyl acetate monomer with from about 40% to about 5% by weight of ethylene monomer is an emulsified reaction medium containing:

(a) at least one surface active agent in an amount of not less than 1.0% by weight, and not more than 2.0% by weight, of the total monomer,

(b) a catalyst, and

(c) a protective colloid, the total weight of the surface active agent and vinyl acetate monomer being introduced into the reaction medium in delayed increments prior to and after the commencement of copolymerization.

4,267,091

BINDERS FOR PAINTS

Hans J. Geelhaar, Frankenthal; Erich Penzel, Ludwigshafen, and Gregor Ley, Wattenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 17, 1979, Ser. No. 30,928

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1978, 2819092

Int. Cl.³ C08K *5/17*

U.S. Cl. 260—29.6 TA **5 Claims**

1. A binder for paints and pebble dash renderings, which comprises

(A) an aqueous emulsion, of from 20 to 70% strength, of a copolymer A, having a glass transition temperature of 0°–50° C., of

(a) a monomer from the group comprising methyl methacrylate, styrene, vinyl acetate, tert.-butyl acrylate and vinyl chloride, with or without acrylonitrile and

(b) a monomer from the group comprising alkyl methacrylates, where alkyl is of 2 to 8 carbon atoms, alkyl acrylates, where alkyl is of 2 to 8 carbon atoms, and/or vinyl propionate, which additionally contains, as copolymerized units,

(c) from 0.5 to 10%, of its weight, of a monomer from the group comprising monoolefinically unsaturated monocarboxylic acids of 3 to 5 carbon atoms, monoolefinically unsaturated dicarboxylic acids of 4 or 5 carbon atoms, amides of monoolefinically unsaturated monocarboxylic acids of 3 to 5 carbon atoms, amides of monoolefinically unsaturated dicarboxylic acids of 4 or 5 carbon atoms and N-alkylolamides of monocarboxylic acids of 3 to 5 carbon atoms and

(d) from 0.5 to 10%, of its weight, of monomers containing carbonyl groups,

(B) from 0.05 to 1 mole, per mole of carbonyl groups present in the copolymer A, of a water-soluble aliphatic dihydrazine compound and

(C) from 0.0002 to 0.02 mole, per mole of dihydrazine compound, of a water-soluble salt of a metal from the group comprising zinc, manganese, cobalt and lead.

4,267,092

FILLER COMPOSITION COMPRISING A FILLER AND AN AQUEOUS BINDER RESIN EMULSION COMPRISING A QUICK DRYING POLYMER EMULSION AND A FLEXIBLE POLYMER EMULSION

Denis V. Glaser, London, and Norman Heeley, Hitchin, both of England, assignors to Polycell Products Limited, Hertfordshire, England

Filed Jun. 21, 1979, Ser. No. 50,608

Claims priority, application United Kingdom, Jun. 23, 1978, 27782/78

Int. Cl.³ C08L *33.08*

U.S. Cl. 260—29.6 RB **6 Claims**

1. A filler composition comprising, (i) 60 to 85% by weight of a particulate filler selected from the mineral group consisting of silica, dolomite and calcite, or mixtures of any thereof, said particulate filler being of such particle size that at least 95% of the filler passes a 150 μm sieve, at least 50% by weight passes a 53 μm sieve, and having a weight average particle size of at least 20 μm, and correspondingly (ii) 40 to 15% by weight of an aqueous binder resin emulsion of solids content 40 to 70% by weight, said binder resin emulsion comprising (a) a quick drying polymer emulsion having a minimum film forming temperature above 5° C. and (b) a flexible polymer emulsion having a minimum film forming temperature below 5° C., the amount of polymer in said emulsion of minimum film forming temperature above 5° C. being 60 to 90% by weight of the total weight of the polymers in said emulsions, said composition being hardenable to provide a crack-and-weather-resistant finish which can be abraded, for example by sanding.

4,267,093

AQUEOUS SUSPENSION OF INORGANIC OXIDIC MATERIAL

Horst Hanisch, Niederkassel-Mondorf; Karl-Martin Rödder, Troisdorf-Spich; Robert Büning, Troisdorf-Sieglar, and Hans-Jürgen Hass, Troisdorf-Spich, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Jul. 23, 1979, Ser. No. 59,878

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1978, 2832111

Int. Cl.³ C08L *33/02*

U.S. Cl. 260—29.6 H **1 Claim**

1. Aqueous filler suspension composed of inorganic oxide material and a dispersing agent, characterized in that it con-

tains as a dispersing agent an aqueous solution of maleic acid-vinyl alkoxysilane copolymer.

4,267,094

AQUEOUS POLYMER MIXTURE, PROCESS FOR ITS PREPARATION AND ITS USE AS SUBSTRATE ANCHORING, BLOCKING RESISTANT ONE-COAT SEALING LACQUER ON SHEET PRODUCTS

Helmut Huhn, Walsrode, and Werner Karstens, Fallingbostel, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 14, 1980, Ser. No. 121,367

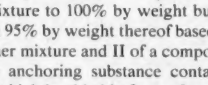
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1979, 2906118

Int. Cl.[3] **C08L** *27/08*

U.S. Cl. 260—29.6 RW **14 Claims**

1. An aqueous polymer mixture of at least two components containing a vinylidene halide copolymer for the preparation of heat-sealing one layer coatings comprising

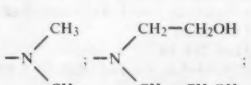
I component A which containins the vinylidene halide compolymer and is present in the form of an acid aqueous dispersion and consists of micronuclear shell structures comprising a copolymer which forms the nuclear portion which copolymer consists of recurrent structural units derived from a monomer mixture of 10 to 57% by weight of methyl acrylate and/or 5 to 30% by weight of ethyl acrylate and/or 1 to 5% by weight of acrylic acid and/or 15 to 30% by weight of methacrylic acid-n-butyl ester and/or 15 to 30% by weight of methyl methacrylate and the amount of vinylidene halide necessary to make up the percentage by weight to 100, and a copolymer forming the shell portion, consisting of recurrent structural units derived from a monomer mixture of 1 to 14% by weight of methyl acrylate and/or 1 to 14% by weight of methyl methacrylate and/or 1 to 14% by weight of ethyl methacrylate and/or 1 to 14% by weight of ethyl hexyl acrylate and/or 1 to 14% by weight of acrylic acid-n-butyl ester and/or 1 to 14% by weight of methacrylic acid-n-butyl ester and 0.1 to 5% by weight of itaconic acid and the quantity of vinylidene halide required to make up this monomer mixture to 100% by weight but not amounting to more than 95% by weight thereof based on 100% of the total monomer mixture and II of a component B, which is a polymeric anchoring substance containing functional groups and which is added in form of an alkaline aqueous solution and consists of homopolymers and/or copolymers derived from unsaturated carboxylic acid amid-N-methylol derivatives corresponding to the general formula



in which

R represents —H or —CH_3

and Y represents



—OH ; —O—CH_3 ; —O—C_2H_5 ; —O—$COCH_3$; or —O—COC_2H_5 .

4,267,095

RESIN COMPOSITION

Clara J. del Valle, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 26, 1978, Ser. No. 955,040

Int. Cl.[3] **C08L** *63/00, 67/06;* **C08K** *3/20, 3/26*

U.S. Cl. 260—40 R **19 Claims**

1. A resin composition comprising: an organic resin selected from the group consisting of polyester, vinylester and mixtures thereof, an organic halogenated flame retardant incorporated within said organic resin so that halogen atoms are bonded to said organic resin in an amount sufficient to impart flame retardancy to said organic resin, and a synergistic smoke suppressive filler of calcium carbonate and alumina trihydrate.

4,267,096

COMPOSITION OF A SELECTIVELY HYDROGENATED BLOCK COPOLYMER OF A VINYL AROMATIC COMPOUND AND A DIOLEFIN, A POLYCARBONATE AND AN AMORPHOUS POLYESTER

Jan Bussink, Bergen op Zoom, and Jean M. H. Heuschen, Halsteren, both of Netherlands, assignors to General Electric Company, Pittsfield, Mass.

Filed Nov. 9, 1979, Ser. No. 93,129

Int. Cl.[3] **C08L** *53/02, 69/00*

U.S. Cl. 260—40 R **11 Claims**

1. A thermoplastic composition comprising an intimate blend of:

(a) from about 0.1 to about 6 parts by weight of a selectively hydrogenated linear, sequential or radial teleblock copolymer of a vinyl aromatic compound $(A)_n$ and $(A)_n{}^1$ and a diolefin (B), of the A-B-A^1; A-$(B\text{-}A\text{-}B)_n$-A; $A(BA)_nB$; $(A)_4B$; $B(A)_4$; or $B[(AB)_nB]_4$ type, wherein n is an integer of from 1 to 10;

(b) from about 65 to about 97.5 parts by weight of an aromatic polycarbonate resin; and

(c) from about 1 to about 30 parts by weight of an essentially amorphous polyester resin.

4,267,097

MATERIAL FOR DENTAL PURPOSES

Rudy Michl, and Peter Wollwage, both of Mauren, Liechtenstein, assignors to Perdent, GmbH., Schaan, Liechtenstein

Filed Jan. 23, 1975, Ser. No. 543,532

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1974, 2403211

Int. Cl.[3] **C08K** *3/36, 9/06*

U.S. Cl. 260—42.15 **9 Claims**

1. A composition for dental uses, such as prostheses, filing materials or the like, comprising:

a first component comprising a monomeric binding material selected from a member of the group consisting of (a) long chain monomer esters of bisphenol A and glycidyl methacrylates, (b) adducts of diisocyanates and hydroxymethylacrylates, (c) difunctional esters of acrylic and methacrylic acids, and (d) mixtures of two, or of three of (a), (b) and (c), and

a second component comprising a micro-fine inorganic filler being present in an amount of about 50 to 90% based on the weight of said composition and having a particle size within the range of about 10 to 400 millimicrons and a BET surface area of less than about 200 m^2/g, wherein at least 50% of the filler particles have a particle size within the range of 10 to 40 millimicrons, in admixture with at least one bead or chip polymer of the group consisting of polyvinylchloride and copolymers thereof, polystyrene and copolymers thereof, polyamides, polymeric acrylates and polymeric methacrylates.

4,267,098

STABILIZED COPOLYMERS BASED ON ETHYLENE AND TETRAFLUOROETHYLENE, AND PROCESSES FOR THEIR PREPARATION

Robert Hartwimmer, and Jürgen Kuhls, both of Burghausen, Salzach, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 19, 1979, Ser. No. 4,708

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1978, 2802916

Int. Cl.³ C08K *5/51, 5/52*

U.S. Cl. 260—45.75 W **12 Claims**

1. A mixture comprising:

(a) 99.999 to 98% by weight, calculated on the mixture, of at least one ethylene-tetrafluoroethylene copolymer which in addition to polymerized ethylene and tetrafluoroethylene units can contain further polymerized units, derived from monomers which are copolymerizable with tetrafluoroethylene, and

(b) 0.001 to 2% by weight, calculated on the mixture, of at least one metal salt of an acid of phosphorus selected from the group consisting of phosphorous acid $H_2(HPO_3)$, diphosphorous acid $H_2(H_2P_2O_5)$, hypodiphosphorous acid $H_2(H_2P_2O_4)$, and hypophosphorous acid $H(H_2PO_2)$, or mixtures thereof wherein the cation of that metal salt is a metal cation of the first to third main group of the periodic table of the elements, zinc or manganese.

4,267,099

PROCESS FOR PREPARING AQUEOUS DISPERSION OF ROSIN-BASE MATERIALS

Toshiharu Okumichi, Suita, and Kimio Kawatani, Daito, both of Japan, assignors to Arakawa Kagaku Kogyo Kabushiki Kaisha, Japan

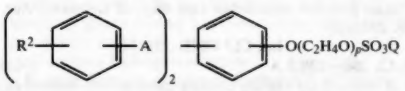
Filed Jan. 21, 1980, Ser. No. 113,604

Claims priority, application Japan, Dec. 28, 1978, 53-161560; Feb. 7, 1979, 54-13516; Feb. 28, 1979, 54-23631; Mar. 28, 1979, 54-37567

Int. Cl.³ C09F *1/04;* **C08L** *93/04*

U.S. Cl. 260—101 **4 Claims**

1. A process for preparing an aqueous dispersion of a rosin-base material by mixing together a melt of the rosin-base material, a dispersant and water to obtain a dispersion comprising a continuous phase of the rosin-base material and a dispersed phase of the water, and adding water to the dispersion to invert the dispersion to the contemplated aqueous dispersion comprising a dispersed phase of the rosin-base material and a continuous phase of the water, said rosin-base material comprising 0 to 95% by weight of rosins and 5 to 100% by weight of fortified rosins, the process being characterized in that the dispersant is at least one salt of sulfuric acid half ester represented by the formula



wherein R^2 is hydrogen or lower alkyl, A is straight-chain or branched-chain alkylene having 2 to 3 carbon atoms, p is an integer of 4 to 25, and Q is a monovalent cation.

4,267,100

PROCESS FOR FORMING AN EGG WHITE SUBSTITUTE

Pei K. Chang, Montrose, and Mary C. Concilio-Nolan, New York, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 582,489, May 30, 1975, abandoned. This application Sep. 28, 1977, Ser. No. 837,119

Int. Cl.³ A23J *1/20*

U.S. Cl. 260—112 R **10 Claims**

1. A process for forming an egg white substitute which consists of adjusting the pH of a solution containing a whey protein to a value of from about 11 to about 13, thereafter reducing the pH of the solution to a value of from about 4.0 to about 6.0 to thereby yield a water solution of a modified whey product and insoluble whey solids, and separating the water solution of the modified whey product to yield said water solution as the egg white substitute.

4,267,101

PROCESS FOR OBTAINING HUMAN RELAXIN FROM FETAL MEMBRANES

Mario Bigazzi, Florence, Italy, assignor to Serono Laboratories Inc., Braintree, Mass.

Filed Feb. 1, 1980, Ser. No. 117,444

Int. Cl.³ A61K *35/48, 35/54*

U.S. Cl. 260—112 R **6 Claims**

1. A process for obtaining human Relaxin which comprises the steps of:

(a) mincing and homogenizing human fetal membranes; and

(b) precipitating and discarding the tissue residues and the heaviest cellular organelles to obtain a crude Relaxin extract.

5. In a process of obtaining human Relaxin by recovery from human source material, the improvment which comprises employing fetal membranes as said source material.

4,267,102

BLEOMYCIN GROUP ANTIBIOTICS

Akio Fujii, Kamakura; Takeyo Fukuoka, Tokyo; Yasuhiko Muraoka, Kitamoto; Tomohisa Takita, Asaka, and Hamao Umezawa, Tokyo, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

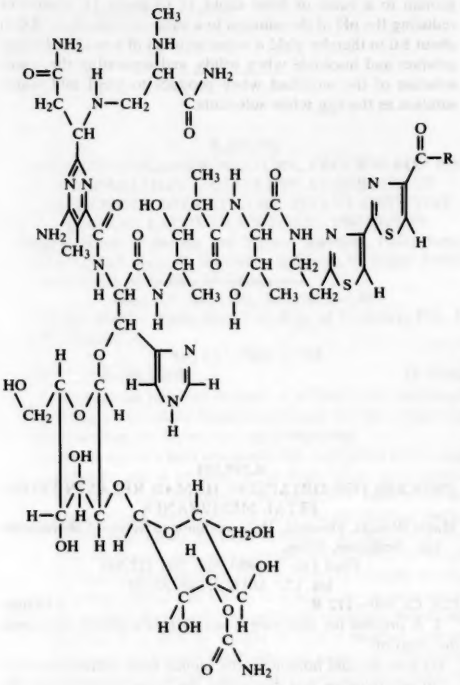
Filed Feb. 29, 1980, Ser. No. 126,123

Claims priority, application Japan, Mar. 5, 1979, 54-24555; Mar. 5, 1979, 54-24556

Int. Cl.³ C07C *103/52;* **A61K** *37/00*

U.S. Cl. 260—112.5 R **8 Claims**

1. A N-methylbleomycin represented by the general formula



(wherein R represents a terminal amine moiety of bleomycins), a copper complex thereof, and a non-toxic salt thereof.

4,267,103

SOLVENT POLYMERIZATION OF CARBOXYL CONTAINING MONOMERS

Louis Cohen, Avon Lake, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Dec. 7, 1978, Ser. No. 967,447

Int. Cl.[3] C08F *2/06*; C08L *1/02, 1/00*

U.S. Cl. 260—17.4 UC **24 Claims**

1. A process for preparing polymers of olefinically unsaturated polymerizable carboxylic acid monomers in a solvent consisting essentially of a moderate to strongly hydrogen bonded solvent having a hydrogen bonding number from about 0.7 to 1.7 and solubility parameters of greater than about 8 up to about 15 which comprises converting at least three weight percent of said carboxylic acid monomer to a salt by reaction with an alkali, ammonia or amine and wherein said acid monomer comprises at least 70 weight percent of total monomers being polymerized in said solvent.

4,267,104

DYES FROM SELECTED SUBSTITUTED ANILINE DIAZO COMPONENTS AND ANILINE COUPLERS CONTAINING SULFATE ESTER GROUPS

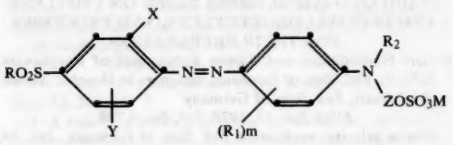
Ralph R. Giles, and Max A. Weaver, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 14, 1979, Ser. No. 48,562

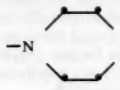
Int. Cl.[3] C09B *29/033, 29/036, 29/085, 29/26*

U.S. Cl. 260—207.3 **6 Claims**

1. A compound of the formula:



wherein R is selected from alkoxy, aryl, cycloalkyl, aryloxy, NH_2, NH alkyl, NH aryl, N(alkyl)$_2$, N(alkyl)aryl,



alkyl, and alkyl substituted with 1-3 groups selected from hydroxy, phenyl, alkoxy, alkoxyalkoxy, alkanoylamino, and alkanoyloxy; X is hydrogen, halogen, alkyl, or alkoxy; Y is hydrogen or halogen; R_1 is selected from hydrogen, alkyl, alkoxy, halogen, acylamido, alkylthio, and aryloxy; R_2 is selected from hydrogen, aryl, cycloalkyl, and alkyl; m is 0, 1, or 2; M is Na^+, K^+, H^+, or NH_4^+; Z is selected from straight or branched chain alkylene, and such alkylene substituted with aryl, halogen, OSO_3M, alkoxy, or aryloxy, $—CH_2(CH_2)_nX—CH_2(CH_2)—_p$, where n is 1, 2 or 3, p is 0, 1, 2 or 3, and X is O, S, SO_2, $—SO_2NH—$, $—SO_2N(alkyl)—$, $SO_2N(aryl)—$, $—N(SO_2\ aryl)—$, —NHCO—, —NHCONH—, $—N(SO_2$ alkyl)—, and —CON(alkyl)—; wherein in all of the above groups containing alkyl, alkylene, or cyclic radicals, such radicals bear from 0—3 substituents selected from hydroxy, alkoxy, aryl, aryloxy, cyclohexyl, furyl, alkylcyclohexyl, aroyloxy, alkoxycarbonyl, alkanoyloxy, sulfamoyl, $SO_2NH(aryl)$, $SO_2NH(alkyl)$, $SO_2N(dialkyl)$, NHCOO(alkyl), NHCONH(alkyl), alkanoylamino, lower alkylsulfonamido, succinimido, glutarimido, phthalimido, 2-pyrrolidono, cyano, carbamoyl, alkylcarbamoyl, alkoxyalkoxy, alkylthio, halogen, arylthio, alkylsulfonyl, and arylsulfonyl; wherein the alkyl or alkylene moieties of the above groups are straight or branched of 1-6 carbons; and wherein the aryl moieties of the above groups are of 6-12 carbons.

4,267,105

PROCESS FOR THE RAPID COOLING OF GASES WHICH CONTAIN CAPROLACTAM VAPOR

Uwe Brand, Rosengarten; Hugo Fuchs, Ludwigshafen, and Ruediger Schmitz, Lambsheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 9, 1980, Ser. No. 138,545

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1979, 2916415

Int. Cl.[3] C07D *201/16*

U.S. Cl. 260—239.3 A **6 Claims**

1. A method for rapidly cooling gases which contain caprolactam vapor produced by catalytic rearrangement of cyclohexanone-oxime in the gas phase in the presence of a supported catalyst containing boric acid, in a cooling zone, which comprises;

(a) feeding a finely divided liquid coolant at a temperature of from 90° to 200° C. into the cooling zone from above;

(b) injecting the gases containing caprolactam vapor at 330° to 400° C. radially, at high velocity, through nozzle orifices into the cooling zone at locations downstream from the liquid coolant feed;

(c) mixing thoroughly the gases containing caprolactam vapor with the finely divided liquid coolant to cool said gases to a temperature of from 100° to 200° C.; and

(d) discharging the cooled mixture of gases and coolant from the cooling zone.

4,267,106
NEW PROCESS FOR THE PREPARATION 17β-HYDROXY-3-OXO-17α-PREGNENE AND PREGNADIENE-21-CARBOXYLIC ACID γ-LACTONES

Arthur F. Marx, Delft; Peter M. Smid, Bleiswijk, and Pieter Vellekoop, The Hague, all of Netherlands, assignors to Gist Brocades N.V., Delft, Netherlands

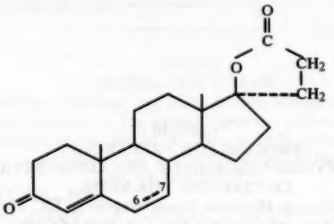
Filed Aug. 15, 1979, Ser. No. 66,854

Claims priority, application United Kingdom, Aug. 15, 1978, 33384/78

Int. Cl.³ C07J *71/00, 73/00*

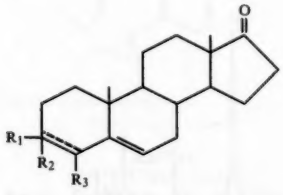
U.S. Cl. 260—239.57 **14 Claims**

1. A process for the preparation of 17β-hydroxy-3-oxo-17α-pregn-4-ene-21-carboxylic acid γ-lactone and 17β-hydroxy-3-oxo-17α-pregna-4,6-diene-21-carboxylic acid γ-lactone of the formula:



I

wherein the dotted line between the 6–7 positions indicates an optional double bond, the double bond being present in the latter compound, which comprises reacting an androst-5-ene-17-one of the formula:



III

wherein:

(i) R_1 represents a group —OR_4, in which R_4 represents a hydrogen atom, an alkyl or methoxyalkyl group or a 2-tetrahydropyranyl group or a 2-tetrahydrofuryl group, and

R_2 and R_3 each represent a hydrogen atom; or

(ii) R_1 and R_2 are the same or different and each represents an alkoxy group or R_1 and R_2 together represent an alkylenedioxy group having 2 or 3 carbon atoms in the alkylene moiety, and

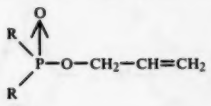
R_3 represents a hydrogen atom, or

(iii) R_1 represents an alkoxy or methoxyalkoxy group or a group

wherein R_7 and R_8 are the same or different and each represents an alkyl group, or R_7 and R_8 together with the nitrogen atom to which they are attached represent a 5- or 6-membered heterocyclic group, which may contain a further hetero atom in the ring, and

R_2 and R_3 together represent an additional bond in the 3–4 position

with an organo-phosphorus compound of the formula:

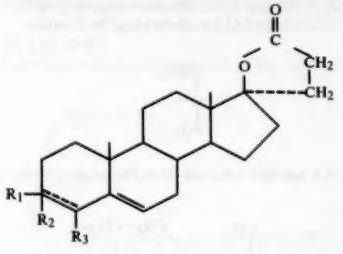


IV

wherein:

R represents a group —OR′ in which R′ represents an alkyl group, or

R represents a group —$N(R'')_2$ in which R″ represents an alkyl group or —$N(R'')_2$ represents a 5- or 6-membered heterocyclic group, which may contain a further hetero atom in the ring, wherein alkyl moieties in all of said formulas contain no more than 6 carbon atoms, in an organic medium at a temperature between about −90° and +50° C. in the presence of a strong base to obtain a corresponding γ-lactone of the formula:



V

wherein R_1, R_2 and R_3 are as hereinbefore defined, and converting the compound thus obtained into the 3-oxo-pregn-4-ene-21-carboxylic acid γ-lactone or 3-oxo-pregna-4,6-diene-21-carboxylic acid γ-lactone of formula I.

4,267,107
REACTIVE DYESTUFFS

Manfred Groll, Cologne, and Klaus Wunderlich, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

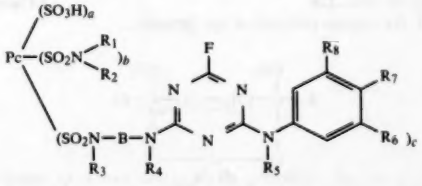
Continuation of Ser. No. 919,312, Jun. 26, 1978, abandoned. This application May 29, 1979, Ser. No. 43,120

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1977, 2729011

Int. Cl.³ C09B *47/04*

U.S. Cl. 260—242.2 **3 Claims**

1. Phthalocyanine reactive dyestuffs of the formula



wherein

Pc = the radical of a copper phthalocyanine or nickel phthalocyanine,

R_1, R_2, R_3 and R_4 = hydrogen, methyl or ethyl,

R_5 = hydrogen,

B = 1,2-phenylene, 1,3-phenylene, 1,4-phenylene or C_2–C_6-alkylene (straight-chain or branched), optionally C_1–C_4-alkyl, C_1–C_4-alkyl or halogen atoms substituted, R_6, R_7 and R_8 = hydrogen, methyl, ethyl, methoxy, SO_3H or

COOH, at least one of these radicals being SO_3H or COOH,
a=1 to 3,
b=1 to 2,
c=1 and
a+b+c=3 to 4.

4,267,108

HYDROXYALKANE DIPHOSPHONIC ACIDS

Helmut Blum, Düsseldorf; Hans-Ulrich Hempel, Overath, and Karl-Heinz Worms, Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Sep. 21, 1978, Ser. No. 944,603

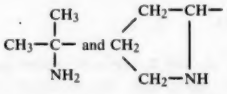
Claims priority, application Fed. Rep. of Germany, Oct. 7, 1977, 2745083

Int. Cl.³ C07D *207/12*; C07F *9/02*

U.S. Cl. 260—326.61 **3 Claims**

1. An hydroxyalkane diphosphonic compound selected from the group consisting of (A) acids having the formula

wherein X is a member selected from the group consisting of



and (B) a non-toxic pharmacologically-acceptable water-soluble salt thereof.

4,267,109

CYCLIC PERKETALS AND THEIR USE FOR CROSS-LINKING HIGH DENSITY POLYETHYLENE

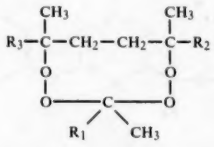
Pastorino, Ronald L., Larkspur, and Roger N. Lewis, Martinez, both of Calif., assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Division of Ser. No. 772,407, Feb. 28, 1977, which is a division of Ser. No. 688,874, May 21, 1976, which is a continuation-in-part of Ser. No. 591,783, Jun. 30, 1975, abandoned. This application Jul. 31, 1978, Ser. No. 929,160

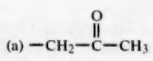
Int. Cl.³ C07D *323/00*

U.S. Cl. 260—338 **7 Claims**

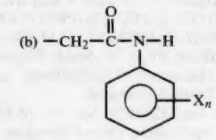
1. An organic peroxide of the formula:



wherein each of R_2 and R_3 is selected from methyl and ethyl; R_1 is selected from



and



where n=0 to 3 and X is lower alkyl or alkoxy of up to about 5 carbon atoms.

4,267,110

PROCESS FOR PREPARING DIBENZYLIDENESORBITOL AND COMPOSITION CONTAINING THE SAME

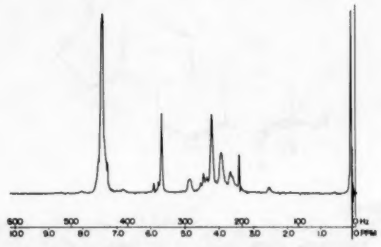
Hiroshi Uchiyama, Hirakata, Japan, assignor to E.C. Chemical Ind. Co., Ltd. and C. Itoh & Co., Ltd., both of Osaka, Japan

Filed Aug. 29, 1979, Ser. No. 70,833

Claims priority, application Japan, Nov. 29, 1978, 53-146587; May 30, 1979, 54-661036

Int. Cl.³ C07D *319/04*

U.S. Cl. 260—340.7 **5 Claims**



1. In a process for preparing dibenzylidenesorbitol by dehydrocondensation of 1 mol of sorbitol with 2 mols of benzaldehyde in the presence of an acid catalyst, the improvement in which the reaction is carried out in two stages; the first-stage reaction comprising reacting, at a temperature of 50° to 70° C., benzaldehyde with an aqueous solution of sorbitol having a sorbitol concentration of at least 70%, in the presence of 0.03 to 0.5 part by weight of an acid catalyst per part by weight of sorbitol; the first-stage reaction being shifted to the second-stage reaction by adding water, as a reaction medium, and an additional amount of an acid catalyst to the first-stage reaction mixture when the conversion of sorbitol to dibenzylidenesorbitol reaches 10 to 40% in the first-stage reaction, the amount of the added water being such that the amount of water in the reaction system during the second-stage reaction is at least 2.5 parts by weight per part by weight of sorbitol charged to the first-stage reaction, the amount of the additional acid catalyst being 0.02 to 0.5 part by weight per part by weight of sorbitol charged to the first stage-reaction; the second-stage reaction comprising reacting the resultant mixture in the suspended state at a temperature of 15° to 25° C.; the resulting dibenzylidenesorbitol being obtained as an aqueous suspension thereof.

4,267,111
PROCESS FOR PREPARING β-(3-EXO-HYDROXY-ENDO-2,3-DIMETHYL-2-NORBORNYL)-PROPIONIC ACID δ-LACTONE

Brian J. Willis, Bergenfield; Philip A. Christenson, Midland Park, both of N.J., and Derek H. R. Barton, Gif-sur-Yvette, France, assignors to Fritzsche Dodge & Olcott Inc., New York, N.Y.

Division of Ser. No. 877,759, Feb. 14, 1978. This application Jun. 7, 1979, Ser. No. 46,481
Int. Cl.³ C07D 311/94
U.S. Cl. 260—343.21 **7 Claims**

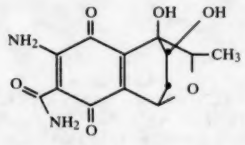
1. A method of preparing β-(3-exo-hydroxy-endo-2,3-dimethyl-2-norbornyl)-propionic acid δ-lactone which comprises treating β-(2-exo-hydroxy-3,3-dimethyl-2-norbornyl)-propionic acid γ-lactone and its endo isomer with an acid capable of effecting rearrangement under suitable conditions of temperature and time.

4,267,112
ANTIBIOTIC U-58,431

Fritz Reusser, Portage, and Libor Slechta, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 34,247, Apr. 30, 1979, abandoned. This application Sep. 27, 1979, Ser. No. 79,446
Int. Cl.³ C07D 311/74
U.S. Cl. 260—345.2 **4 Claims**

1. Antibiotic U-58,431 which can be shown by the following formula:



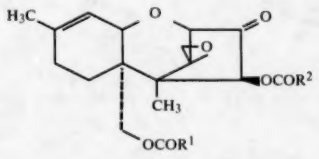
and base addition salts thereof.

4,267,113
ANTITUMOR AGENTS

Takushi Kaneko, Fayetteville; John M. Essery, Pleasantville; Henry Schmitz, Syracuse, and Terrence W. Doyle, Fayetteville, all of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Nov. 19, 1979, Ser. No. 95,917
Int. Cl.³ C07D 311/78
U.S. Cl. 260—345.2 **7 Claims**

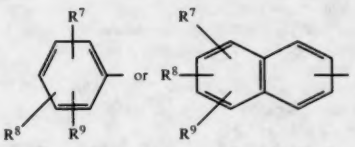
1. A compound of the formula



wherein R^1 and R^2 are each independently (lower)alkyl; halo(lower)alkyl; alkenyl of the formula $—CR^3=CR^4R^5$ in which R^3 is hydrogen, (lower)alkyl or 1'-halo(lower)alkyl and R^4 and R^5 are each independently hydrogen or (lower)alkyl; alkynyl of the formula $—C\equiv CR^6$ in which R^6 is hydrogen or (lower)alkyl; or a radical of the formula

$$Ar—(CH_2)_m—$$

in which m is 0 or an integer from one to four and Ar is



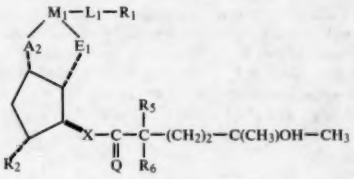
wherein R^7, R^8 and R^9 are each independently hydrogen, halogen, (lower)alkyl or (lower)alkoxy, with the proviso that R^1 and R^2 may not both be methyl.

4,267,114
19-HYDROXY-19-METHYL-6,9α-EPOXYMETHANO-PGF COMPOUNDS

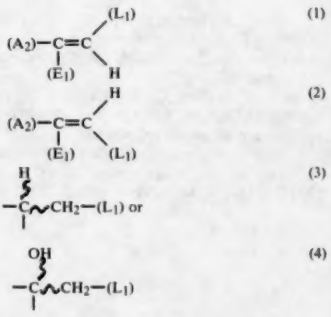
John C. Sih, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 54,720, Jul. 5, 1979, Pat. No. 4,225,507. This application Mar. 3, 1980, Ser. No. 126,509
Int. Cl.³ C07D 311/02
U.S. Cl. 260—345.2 **6 Claims**

1. A prostacyclin-type compound of the formula



wherein A_2 is $—CH_2O—$ with $—CH_2$ bonded to the cyclopentane ring and E_1 is $—CH_2—$;
wherein L_1 is
(1) $—(CH_2)_n—$, wherein n is one to 5, inclusive,
(2) $—(CH_2)_p—CF_2—$, wherein p is 2, 3, or 4; or
(3) $—CH_2—CH=CH—$;
wherein M_1 is



wherein Q is oxo, α—H:β—H, α—OH:β—R_4, or α—R_4:β—OH, wherein R_4 is hydrogen or alkyl of one to 4 carbon atoms, inclusive;
wherein R_1 is
(1) $—COOR_3$,
(2) $—CH_2OH$,
(3) $—CH_2N(R_7)(R_8)$,
(4) $—CO—N(R_7)(R_8)$,
(5) $—CO—NH—SO_2—R_{15}$, or
(6) tetrazolyl,
wherein R_3 is

(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive;
(g) —(Ph)—CO—CH_3,
(h) —(p-Ph)—NH—CO—(p-Ph)—NH—CO—CH_3,
(i) —(p-Ph)—NH—CO—(p-Ph),
(j) —(p-Ph)—NH—CO—CH_3,
(k) —(p-Ph)—NH—CO—NH_2,
(l) —(p-Ph)—CH=N—NH—CO—NH_2,
(m) β—naphthyl,
(n) —CH_2—CO—R_{16},

wherein —(Ph)— is inter-phenylene and —(p-Ph) is inter-para-phenylene or para-phenyl;

wherein R_{16} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation; wherein R_7 and R_8 are hydrogen, alkyl of one to 12 carbon atoms, inclusive, benzyl, or phenyl, being the same or different, and wherein R_{15} is hydrogen, alkyl of one to 12 carbon atoms, inclusive, phenyl, phenyl-substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive, or phenyl substituted with hydroxycarbonyl or alkoxycarbonyl of one to 4 carbon atoms, inclusive, in the alkoxy group wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro, and

wherein X is

(1) trans—CH=CH—,
(2) cis—CH=CH—,
(3) —C≡C—, or
(4) —CH_2CH_2—.

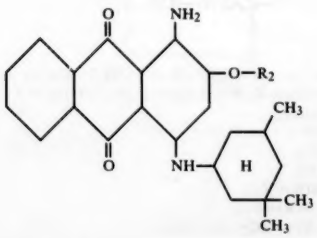
4,267,115

ANTHRAQUINONE COMPOUNDS

Wolfgang Frey, Münchenstein, and Wolfgang Schoenauer, Riehen, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

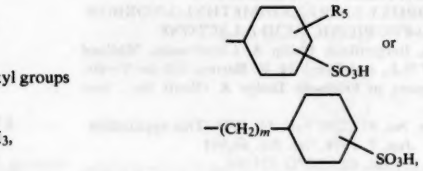
Division of Ser. No. 529,293, Dec. 4, 1974, abandoned, which is a division of Ser. No. 199,811, Nov. 17, 1971, Pat. No. 3,872,137, which is a division of Ser. No. 808,322, Mar. 18, 1969, Pat. No. 3,646,071. This application Aug. 7, 1978, Ser. No. 931,753
Claims priority, application Switzerland, Apr. 8, 1968, 5122/68; May 3, 1968, 8169/68; Sep. 30, 1968, 14593/68
Int. Cl.³ C07C *143/665*
U.S. Cl. 260—373 **3 Claims**

1. A dye of the formula



(VII)

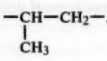
wherein p1 R_2 is



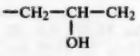
or

R_5 is hydrogen, alkyl or alkoxy with 1 to 9 carbon atoms or halogen,

—CH_2—CH_2—CH_2—,



or



—$(O—CH_2—CH_2)_p$—

and m is 1 or 2.

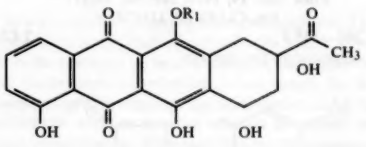
4,267,116

NOVEL DAUNOMYCIN DERIVATIVES, THEIR AGLYCONES AND THE USE THEREOF

Paolo Masi; Antonino Suarato; Luigi Bernardi, all of Milan, and Federico Arcamone, Nerviano, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

Division of Ser. No. 901,358, May 1, 1978, Pat. No. 4,191,755. This application May 14, 1979, Ser. No. 38,689
Claims priority, application United Kingdom, May 5, 1977, 18775/77
Int. Cl.³ C07C *50/16*
U.S. Cl. 260—376 **4 Claims**

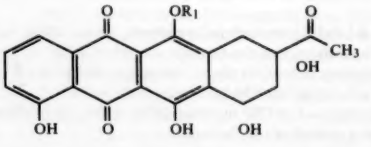
1. A compound of the formula II:



II

wherein R_1 is a lower alkyl having from 1 to 4 carbon atoms.

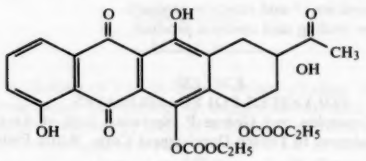
2. A process for preparing a daunomycinone derivative of the formula:



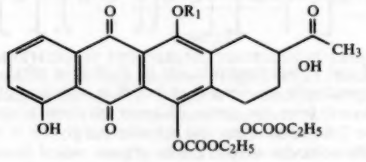
(II)

wherein R_1 is a lower alkyl group having 1 to 4 carbon atoms, by

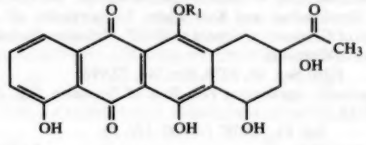
(a) reacting a compound of formula:


(V)

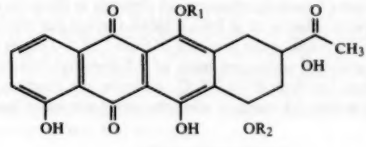
with a halide of the general formula R_1-Y wherein R_1 is a lower alkyl group having 1 to 4 carbon atoms and Y is Cl, Br or I in the presence of a solvent selected from the group consisting of dichloromethane and chloroform, and in the presence of about one equivalent of a base to yield the monoether derivative of the formula:


(VI)

(b) reacting the compound of Formula VI in the presence of a solvent selected from the group consisting of aqueous solvents and alcohols with a base selected from the group consisting of a dilute alkaline hydroxide and an activated basic resin to yield in case of an aqueous medium the compound of the formula:


(II)

wherein R_1 is as defined above; and in case of an alcoholic medium to yield a bis-phenol derivative of the formula:


(VII)

wherein R_1 is as defined above and R_2 is an alkyl group:

(c) hydrolyzing the compound of Formula VII, formed when the solvent is an alcohol, in aqueous trifluoroacetic acid to yield the compound of Formula II.

4,267,117

COMPOUNDS AND PROCESS

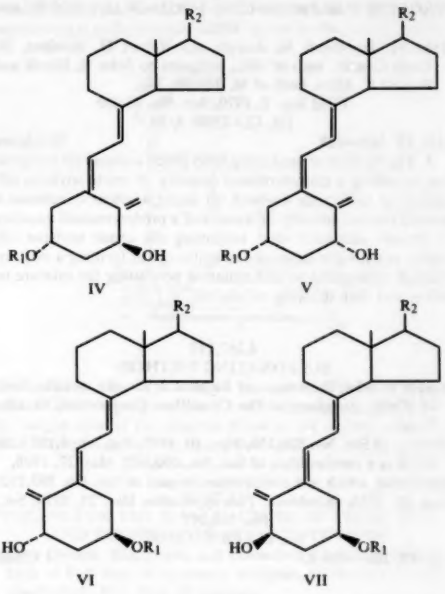
William G. Salmond, Mattawan, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 916,921, Jun. 19, 1978, Pat. No. 4,206,131. This application Jun. 14, 1979, Ser. No. 48,406

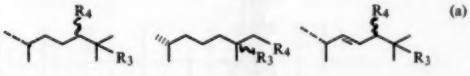
Int. Cl.³ C07J 9/00

U.S. Cl. 260—397.2 **28 Claims**

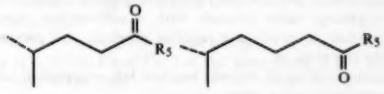
1. A compound selected from the group consisting of compounds having the formula


IV V VI VII

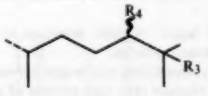
wherein R_1 is selected from the group consisting of hydrogen, trimethylsilyl, t-butyldimethylsilyl, phenyldimethylsilyl, acyl of from 2 to 6 carbon atoms, and aroyl wherein the aryl group is phenyl or substituted by a lower alkyl, lower alkoxy, halogen, nitro or a cyano group; R_2 is selected from the group consisting of


(a)

wherein R_3 is selected from the group consisting of hydrogen, hydroxy, trimethylsilyloxy, acyloxy of from 2 to 6 carbon atoms, inclusive and aryloxy; R_4 is selected from the group consisting of hydrogen, hydroxy, trimethylsilyloxy, t-butyldimethylsilyloxy, phenyldimethylsilyloxy, acyloxy of from 2 to 6 carbon atoms, inclusive, benzoyl, substituted benzoyl; and wherein R_3 and R_4 when taken together form a group selected from the group consisting of acetonide, carbonate and thiocarbonate;


(b)

wherein R_5 is selected from the group consisting of hydrogen, methyl hydroxyl and lower alkoxyl of from 1 to 5 carbon atoms, inclusive; with the proviso that when R_2 is the group



and R_3 is hydrogen or hydroxy R_1 cannot be hydrogen or acyloxy.

4,267,118
PROCESS FOR PRODUCING FOOD GRADE SOYBEAN OIL

Troy M. Trueblood, St. Joseph, and Robert H. Moulton, St. Louis County, both of Mo., assignors to John R. Hersh and Russell E. Allen, both of St. Joseph, Mo.

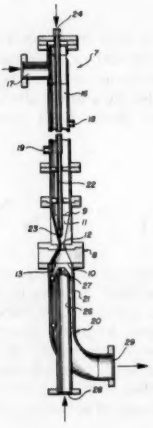
Filed Sep. 7, 1979, Ser. No. 73,209
Int. Cl.³ C09F *5/10*
U.S. Cl. 260—428 **16 Claims**

1. The method of producing food grade soybean oil comprising providing a predetermined quantity of crude soybean oil, adding to said crude soybean oil under ambient conditions a predetermined quantity of water and a predetermined quantity of protein substance, then subjecting the crude soybean oil, water, and protein substance to agitation for forming a mixture thereof, subsequent to said agitation permitting the mixture to settle, and then drawing off the oil.

4,267,119
SULFONATING METHOD

Burton Brooks, Bellevue, and Richard J. Brooks, Seattle, both of Wash., assignors to The Chemithon Corporation, Seattle, Wash.

Division of Ser. No. 850,350, Nov. 10, 1977, Pat. No. 4,185,030, which is a continuation of Ser. No. 690,652, May 27, 1976, abandoned, which is a continuation-in-part of Ser. No. 393,192, Aug. 30, 1973, abandoned. This application Dec. 21, 1979, Ser. No. 106,247
Int. Cl.³ C07C *130/00*
U.S. Cl. 260—458 R **1 Claim**



1. A continuous process for reacting a gaseous sulfonating agent comprising sulfur trioxide with a sulfonatable liquid organic reactant to produce a reaction product, said process comprising the steps of:

introducing said liquid organic reactant into a stream of said gaseous sulfonating agent;

flowing said stream of gaseous sulfonating agent downwardly along a straight path from a point upstream of the location where said organic reactant is introduced;

coaxially injecting said organic reactant downwardly into said gaseous stream from a location along said straight path;

atomizing said liquid organic reactant to form a mist of organic reactant particles;

at least partially atomizing said organic reactant before said introduction thereof into said stream of gaseous sulfonating agent;

reacting said mist of organic reactant particles and said gaseous sulfonating agent in a temperature-increasing exothermic reaction to form a reaction mixture comprising particles of said reaction product;

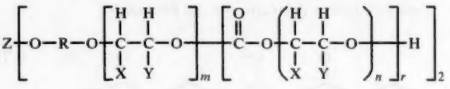
and then cooling said reaction product.

4,267,120
POLYESTER POLYCARBONATES

Michael Cuscurida, and George P. Speranza, both of Austin, Tex., assignors to Texaco Development Corp., White Plains, N.Y.

Filed Dec. 14, 1979, Ser. No. 103,757
Int. Cl.³ C07C *69/96;* C08G *63/62*
U.S. Cl. 260—463 **4 Claims**

1. A polyester polycarbonate of the structure



wherein X and Y, independently, are H, methyl, or ethyl, m and n independently are integers of 1–5, R is a nucleus of a glycol selected from the group of lower alkylene glycols which have 2–6 carbon atoms and polyalkylene glycols of up to about 600 molecular weight, Z is an organic radical from a cyclic aliphatic or aromatic organic acid anhydride having 4–20 carbon atoms, and r is an integer of 1–5.

4,267,121
PREPARATION OF 2,2-DIMETHYL-4-CYANO-BUTYRALDOXIME N-METHYL-CARBAMATE

Rainer Buerstinghaus, Weinheim-Luetzelsachsen; Karl-Heinz Koenig, Frankenthal, and Karl Kiehs, Lampertheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 10, 1979, Ser. No. 73,993
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1978, 2841714
Int. Cl.³ C07C *120/00, 121/16*
U.S. Cl. 260—465.4 **1 Claim**

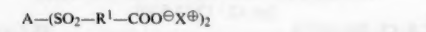
1. A process for the preparation of 2,2-dimethyl-4-cyano-butyraldoxime N-methyl-carbamate which comprises: contacting 2,2-dimethyl-4-cyano-butyraldoxime with an at least equimolar amount of methylcarbamic acid chloride in the form of a concentrated solution of at least 8 moles thereof per liter of inert organic solvent, in the presence of from 1.05 to 2 moles of a tertiary aliphatic amine per mole of 2,2-dimethyl-4-cyano-butyraldoxime, at from 0° to 30° C., whereby the reaction is completed within 15 minutes after the reactants have been added.

4,267,122
AMINOSULFONYLCARBOXYLIC ACIDS AND THEIR SUBSTITUTED AMMONIUM SALTS

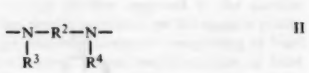
Lucien Thil; Martin Fischer, both of Ludwigshafen, and Wolfgang Kindscher, Fussgoenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 820,722, Aug. 1, 1977, Pat. No. 4,126,634. This application Sep. 27, 1978, Ser. No. 946,200
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1976, 2638860
Int. Cl.³ C07C *147/02;* C23F *11/16;* C07C *147/00, 147/06*
U.S. Cl. 260—501.12 **3 Claims**

1. A compound of the formula I



where R^1 is alkylene of 1 to 5 carbon atoms, A is the radical of a diamine of the formula II



II

R^2 is alkylene of 2 to 18 carbon atoms, alkylene of 2 to 18 carbon atoms interrupted by oxygen or nitrogen, arylene, arylene substituted by alkyl of 1 to 4 carbon atoms, methoxy, ethoxy or halogen, or arylene-alkylene of 6 to 18 carbon atoms, R^3 and R^4 are identical or different radicals chosen from hydrogen, linear and branched saturated, olefinically unsaturated or acetylenically unsaturated alkyl of 1 to 8 carbon atoms, if saturated, or of 2 to 18 carbon atoms, if unsaturated, alkyl of the above type substituted by methoxy or ethoxy, cycloalkyl of 5 to 12 members, phenyl, phenyl substituted by alkyl of 1 to 3 carbon atoms, methoxy, ethoxy, chlorine or bromine, or phenylalkyl, where alkyl is of 1 to 6 carbon atoms, and $X^{\oplus}$ is a substituted ammonium cation.

4,267,123

METHOD OF PREPARING PROPANE SULFONATES

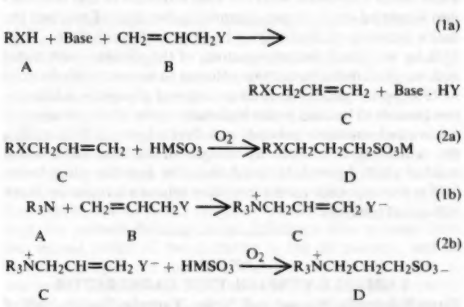
Catherine S. H. Chen, Berkeley Heights; Kirk D. Schmitt, Pennington, and Albert L. Williams, Princeton, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 23, 1979, Ser. No. 96,947

Int. Cl.³ C07C *143/14, 143/38*

U.S. Cl. 260—501.12 **9 Claims**

1. A method of preparing propane sulfonates comprising the following two step reactions:



(1a)

A B C

(2a)

C D

(1b)

A B C

(2b)

C D

where X is O or S in (1a) and (2a), M is NH_4^+ or an alkali metal and R is C_6–C_{16} alkyl, alkenyl or alkynyl and C_6–C_{20} aryl, or C_6–C_{20} alkyl or aryl —O—$(CH_2CH_2O)n$— in which n=2–13 and Y is halide or tosylate and where a predetermined minimum amount of final product D in a molar ratio of D to compound C of at least 1 to 5 is initially added to the reaction mixture of Step (2a) and (2b).

4,267,124

PROCESS FOR THE MANUFACTURE OF CARBOXYLIC PERACIDS

Nicolas Hardy, Jemeppe-sur-Sambre; Luc Lerot, and Rene Walraevens, both of Brussels, all of Belgium, assignors to Propylox, Brussels, Belgium

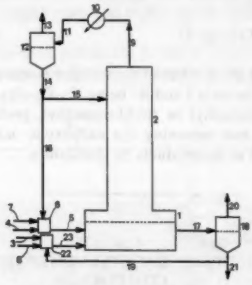
Filed Mar. 27, 1979, Ser. No. 24,372

Claims priority, application France, Mar. 28, 1978, 78 09199

Int. Cl.³ C07C *179/10, 179/12*

U.S. Cl. 260—502 R **18 Claims**

1. In a continuous process for the manufacture of a carboxylic peracid by reaction, in a reaction mixture and under reaction conditions sufficient to produce said carboxylic peracid, of the corresponding carboxylic acid with hydrogen peroxide in the presence of a catalyst and in the presence of an inert organic liquid which is contained in an organic phase and is a solvent for the peracid and is capable of forming a heterogeneous azeotrope with water, which process includes removing water present in the reaction mixture by distillation of the water/organic liquid azeotrope, the improvement comprising maintaining a sufficient amount of water in the reaction mixture to allow the formation of an aqueous phase which is separate from the organic phase containing the organic liquid, the weight ratio of the aqueous phase to the organic phase in the reaction mixture being more than 0.05.



4,267,125

PROCESS FOR THE MANUFACTURE OF PHOSPHINIC AND PHOSPHONIC ACID ANHYDRIDES

Walter Dürsch, Königstein, and Hans-Jerg Kleiner, Kronberg, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

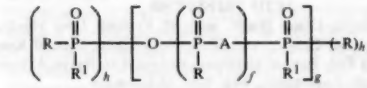
Filed Feb. 27, 1980, Ser. No. 125,183

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1979, 2908264

Int. Cl.³ C07F *9/02*

U.S. Cl. 260—545 P **1 Claim**

1. Process for the manufacture of phosphinic and phosphonic acid anhydrides of the formula



(I),

in which

A stands for alkylene, aralkylene or arylene with 1 to 10 carbon atoms each,

R is C_1–C_8-alkyl,

R^1 is C_1–C_{18}-alkyl or alkenyl which may be substituted by fluorine, chlorine or bromine and may be interrupted by ether oxygen atoms; cycloalkyl or alkylcycloalkyl of a total of 1 to 10 carbon atoms each; aryl or alkylaryl optionally being substituted in the ring by chlorine and/or bromine;

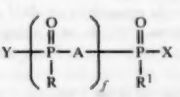
f is 0 ot 1, preferably 0, and always 0 if h is 1;

g is 1, if h is 1 and f is 0 at the same time, or if h is 0, f is 1 and A is C_3H_6;

g is 3 to formally infinite, if h and f are 0, and

g is 2 to formally infinite, if h is 0, f is 1 and A is other than C_3H_6, and

h is 0 or 1, preferably 0, which comprises reacting at 30°–160° C. one mol of a compound of the formula



(II),

in which X is chlorine or bromine, preferably chlorine, Y

is defined as R and is additionally defined as X, and R, R^1, A and f are defined as in the above formula I, with at least b/2 mol(s) of an aliphatic carboxylic acid anhydride of the formula

$$(R^2—CO—)_2—O \qquad (III),$$

b being the number of the halogen atoms in the compound of the formula I and R^2 being C_1–C_3-alkyl, chloromethyl, dichloromethyl or trichloromethyl, preferably CH_3 and C_2H_5, and removing the carboxylic acid halides being formed as by-products by distillation.

4,267,126
N-(PHOSPHONOACETYL)-L-ASPARTIC ACID COMPOUNDS

Robert J. Schultz, Amherst, and Fred W. Starks, Kenmore, both of N.Y., assignors to Starks Associates, Inc., Buffalo, N.Y.

Division of Ser. No. 954,579, Oct. 25, 1978, Pat. No. 4,215,070, which is a continuation-in-part of Ser. No. 932,501, Aug. 10, 1978, Pat. No. 4,179,464, which is a continuation-in-part of Ser. No. 851,382, Nov. 14, 1977, abandoned. This application Jan. 23, 1980, Ser. No. 114,624

Int. Cl.³ C07F *9/40;* **A61K** *31/66*

U.S. Cl. 260—942 **8 Claims**

1. A compound of the group selected from the group consisting of N-(phosphonoacetyl)-L-aspartic acid, disodium salt, P-ethyl ester and dibenzyl ester; N-(phosphonoacetyl)-L-aspartic acid, dibenzyl ester, and the corresponding N,N'-dibenzyl-ethylenediamine salt and cyclohexylamine salt; N-(phosphonoacetyl)-L-aspartic acid, tetraethyl ester, and the corresponding dimethyl P,P-diethyl ester.

4,267,127
PROCESS FOR THE PRODUCTION OF PHOSPHORIC ACID TRIESTERS

Harald Selbeck; Claus Wulff, both of Krefeld; Uwe Hucks, Alpen; Erhard Tresper, and Hugo Vernaleken, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

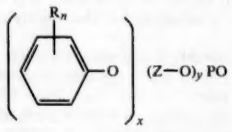
Filed Jul. 25, 1979, Ser. No. 60,679

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1978, 2833341

Int. Cl.³ C07F *9/09*

U.S. Cl. 260—973 **9 Claims**

1. A process for the production of phosphoric acid triesters corresponding to the formula:



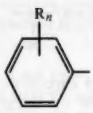
wherein

R represents hydrogen, alkyl containing from 1 to 20 carbon atoms, alkoxy containing from 1 to 20 carbon atoms, phenoxy, an optionally fused phenyl radical, and —$COOR_1$, where R_1 represents an alkyl containing from 1 to 20 carbon atoms, a nitrile or a halogen atom,

n represents an integer of from 1 to 5 and each R may be the same or different,

x represents an integer of from 1 to 3,

Z represents an alkyl containing from 1 to 20 carbon atoms or the formula:



wherein

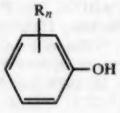
R and n are defined as above and

y represents 3-x,

said process comprising reacting phosphorus oxyhalides, phosphorus pentahalides, phosphoric acid monoester dihalides or phosphoric acid diester halides corresponding to the formula:

$$ZO\ PO\ Hal_2 \text{ or } (ZO)_2PO\ Hal$$

wherein Z is defined as above and Hal represents Cl and/or Br. with at least one hydroxyaryl compound of the formula:



wherein R and n are defined as above, in a two-phase mixture of an organic solvent, an aqueous alkaline earth metal and/or alkali metal hydroxide solution, characterized in that the reaction is carried out in stages comprising the steps of reacting the entire quantity of hydroxyaryl compounds with from 30 to 95% by weight of the total quantity of the alkaline earth metal and/or alkali metal hydroxide solution to be used with from 30 to 95% by weight of the total quantity of phosphorus halogen compounds to be used under high turbulence in the presence of the water-immiscible solvent, as a first stage and then adding the remaining 5 to 70% by weight of alkaline earth metal and/or alkali hydroxide metal solution and the phosphorus halogen compound to the reaction mixture as one or more individual portions.

4,267,128
VARIABLE VENTURI TYPE CARBURETOR

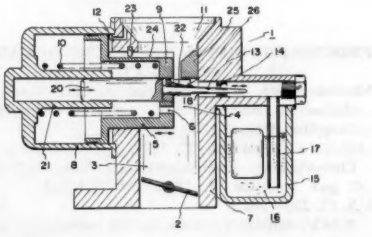
Tatuo Kobayashi, Susono, and Nobuo Yamada, Kariya, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Oct. 11, 1979, Ser. No. 83,830

Claims priority, application Japan, Apr. 11, 1979, 54-043037

Int. Cl.³ F02M *9/06*

U.S. Cl. 261—44 C **8 Claims**



1. In a variable venturi type carburetor including a casing and having a suction chamber formed at one side of its venturi portion upstream from a throttle valve, a suction piston movably received by the suction chamber so as to be moved into and out of the suction chamber, suction spring means for biasing the suction piston in one direction, a metering jet formed in

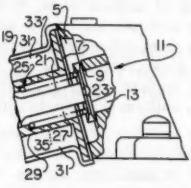
another side of the venturi portion opposed to the suction chamber and a metering needle provided on the suction piston facing the metering jet, the improvement comprising at least one axial guide groove formed on said suction piston, at least one guide pin, and at least one guide roller rotatably mounted on said guide pin provided on said casing of the carburetor, said guide roller being operatively positioned to roll in said guide groove, said spring means rotatably biasing said suction piston against said roller.

4,267,129

CARBURETOR BOWL VENT

Harvey L. Ruth, St. Louis; Michael H. Schneider, Chesterfield, and Michael B. Phelan, Florissant, all of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Nov. 9, 1979, Ser. No. 92,751
Int. Cl.³ F02M 5/08
U.S. Cl. 261—72 R **2 Claims**



1. In a carburetor for an internal combustion engine, the carburetor having a fuel bowl in which fuel vapors are collected when the engine is not in operation and an air passage into which air is drawn into the engine when the engine is in operation, the improvement comprising means defining a flow passage through which vapors created in the fuel bowl are drawn off from the fuel bowl, a chamber to which fuel vapors drawn off from the fuel bowl are directed, the chamber having a first outlet through which fuel vapors drawn to the chamber are directed to the canister and a second outlet through which fuel vapors drawn to the chamber are directed to the air passage, the passage defining means defining a flow passage from the second outlet of the chamber to the air passage; and an electrically operated solenoid having a movable armature to one end of which is attached a valve member movable between a first position opening the first chamber outlet and closing the second chamber outlet and a second position closing the first chamber outlet and opening the second chamber outlet, the valve member being moved to its first position when the engine is off and to its second position when the engine is operating, and the solenoid having a housing and a circular inner wall within the housing, the wall defining a first chamber in which the armature moves and the wall and housing defining a second and outer chamber communicating with the first chamber via passages through the wall, and the housing having an opening communicating with the canister whereby fuel vapors directed to the canister when the valve member is moved to its first position flow to the canister through the first and second chambers formed within the solenoid.

4,267,130

PORTABLE AUXILIARY COOLING TOWER

Harold D. Curtis, Rte. 2, Chickasha, Okla. 73018

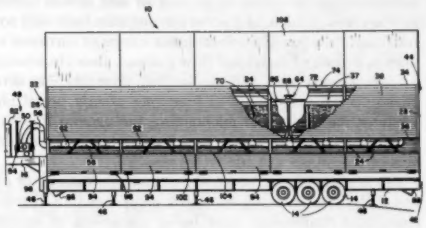
Filed Aug. 16, 1979, Ser. No. 66,926
Int. Cl.³ B01F 3/04
U.S. Cl. 261—112 **11 Claims**

1. A portable auxiliary cooling tower for performing cooling and aerating of liquids comprising:

(a) a housing having shape and size compatible for movement with traffic along the highways without disassembly, air intake ports along each side of the housing, air outlet ports along the top of the housing, a frame member for supporting the housing and a plurality of wheels axially supported by the frame suitable for movement along the highways;

(b) a plurality of closely spaced blowers carried within an upper portion of the housing for pulling outside air through the intake ports and expelling the air through the outlet ports;

(c) packing provided within the housing between the inlet and outlet ports for filming the liquid being cooled and aerated;



(d) a liquid distribution system for pulling liquid into the housing and distributing the liquid to the packing;

(e) drift eliminator means provided in the outlet ports for stripping liquid from the air after it has passed through the packing;

(f) liquid expulsion system for removing the cooled aerated liquid; and

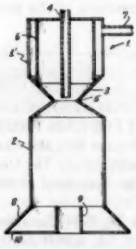
(g) leveling means carried by the frame and contactable with the ground for leveling and adjusting elevation at the site.

4,267,131

METHOD FOR INTIMATE CONTACTING OF PLURAL PHASES AND PHASE CONTACTOR APPARATUS THEREFOR

Francois Prudhon, Versailles, and Augustin Scicluna, Aubervilliers, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Continuation of Ser. No. 872,151, Jan. 25, 1978, abandoned, which is a continuation-in-part of Ser. No. 770,802, Feb. 22, 1977, which is a continuation of Ser. No. 479,774, Jun. 17, 1974, abandoned. This application Feb. 21, 1979, Ser. No. 13,295
Claims priority, application France, Jan. 25, 1977, 77 02015
Int. Cl.³ B01F 3/04
U.S. Cl. 261—153 **33 Claims**



1. A process for the intimate contacting of plural, physically disparate phases, comprising (i) establishing a vertically descending current of axially extending, axially symmetrical helical flow of a first gaseous phase, (ii) separately establishing a current of coaxially downwardly vertically extending, rectilinear continuous jet stream of a physically disparate second phase, (iii) maintaining said currents of said first and said second phases physically separate from each other, (iv) circulating and directing said currents which comprise the plural phases to a zone of restricted flow passage with respect to said

helical flow, (v) at said zone of restricted flow passage, converging and intimately, homogeneously admixing said plural currents, and disintegrating into a multitude of droplets and entraining said rectilinear jet stream current within said helical current of gaseous flow, and maintaining at such zone of convergence a momentum of the first phase helical flow of at least 100 times greater than the momentum of the second phase, coaxial rectilinear jet stream, (vi) concurrently establishing a flow defining a layered horizontal stack of a plurality of hyperboloids by means of the trajectory of said helical current of gaseous flow, which, at a point downstream from said zone of restricted flow passage coestablishes a zone of narrower width than said zone of restricted flow passage, thus circumscribing a zone of depression, and thence (vii) diverging and abruptly changing the velocity of at least one of said plural phases, while at the same time maintaining the general direction of flow of said admixed plural phases, and whereby phase separation of the product of admixture results.

18. A phase contactor for the intimate contacting of plural, physically disparate phases, which comprises (i) a distribution zone, said distribution zone being comprised of means for establishing a vertically descending current of axially extending, axially symmetrical helical flow of a first gaseous phase, means for separately establishing a current of coaxially downwardly vertically extending, rectilinear continuous jet stream of a physically disparate second phase, and means for insuring physical separation from each other of said currents of said first and second phases, (ii) a contact zone, said contact zone being comprised of a zone of restricted flow passage with respect to the means for establishing the helical flow, means for the convergence and intimate homogeneous admixture of the separately supplied disparate phases, means for imparting a momentum to the gaseous first phase helical flow which is at least 100 times greater than the momentum of the second phase, coaxial rectilinear flow, means for disintegrating into a multitude of droplets and entraining said rectilinear jet stream current within said helical current of gaseous flow, means for concurrently establishing a flow defining a layered horizontal stack of a plurality of hyperboloids via the trajectory of said helical current of gaseous flow, and means for establishing, at a point downstream from said zone of restricted flow passage, a flow zone of narrower width than said zone of restricted flow passage, same also circumscribing a zone of depression, and (iii) a phase separation zone, said phase separation zone being comprised of means for abruptly changing the velocity of at least one of said plural phases, means for maintaining the general direction of flow of said admixed plural phases, and means for effecting phase separation of the product of admixture of said plural phases.

4,267,132

METHOD FOR HIGH STRENGTH DOUBLE BASE SOLVENTLESS GUN PROPELLANT

Larry D. Henderson, Bryans Rd., and Craig E. Johnson, Indian Head, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 28, 1974, Ser. No. 475,331
Int. Cl.[3] **C06B** *21/00*
U.S. Cl. 264—3 B **3 Claims**

1. A method of preparing crosslinked double base propellants which comprises incorporating up to 0.1 weight percent of a crosslinking catalyst into the subsequently crosslinked double base propellant, partially curing the propellant at a temperature from about 120° F. to about 140° F. until the energetic binder has become plasticized, and extruding the propellant at a temperature from about 110° F. to about 150° F. at a rate from about 0.5 ins/min to about 6 ins/min after plasticization has occurred but before crosslinking has made the propellant too viscous for extrusion.

4,267,133

MANUFACTURE OF DENTURE BASE

Tamotsu Kohmura, Anamushi, and Jun-ichi Yoshimine, Kohama-nishi, Japan, assignors to Sankin Industry Co., Ltd., Osaka, Japan

Filed Mar. 14, 1979, Ser. No. 20,478
Claims priority, application Japan, Mar. 15, 1978, 53-30459
Int. Cl.[3] **A61C** *13/00*
U.S. Cl. 264—18 **19 Claims**

1. A method for manufacturing a denture base, comprising in sequence the steps of:

(a) applying thinly a photocuring resin compound to a plaster mold coated with a mold release agent and curing the resin compound by uniform exposure thereof to actinic radiation, said photocuring resin compound comprising a polymerizable methacrylate and/or acrylate with the addition of a light sensitizer or a filler;

(b) applying the above defined photocuring resin compound to the layer photocured in the step (a), after the affixing and alignment of artificial teeth, then curing the resin compound by uniformm exposure to actinic radiation; and

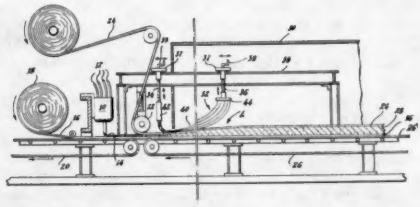
(c) applying the above defined photocuring resin compound to the layer photocured during the step (b), after the formation of artificial gingavae, then curing the resin compound by uniform exposure to actinic radiation.

4,267,134

METHOD AND APPARATUS FOR SMOOTHING FOAMED PLASTIC CORE PANELBOARD SURFACE

Richard A. Kolakowski, Northford, and Stephen A. Knis, Meriden, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Sep. 24, 1979, Ser. No. 77,984
Int. Cl.[3] **B29D** *27/04*
U.S. Cl. 264—46.2 **8 Claims**



1. In a method for improving planarity of the surface of panelboard composed of a foamed plastic core having a facing sheet thereon when produced in continuous manner on a conventional nip-roll, free-rising, foamed plastic core panelboard production line, the improvement which comprises

draping above said production line, downstream of the nip-roll, and extending over a region of said production line corresponding to locations of less than full development of the foam in the panelboard being produced thereon, a non-advancing smoothing member comprising a length of longitudinally flexible, transversely stiff belt-like material,

supporting said member at its ends to allow an intermediate portion thereof to sag by weight of gravity in the foam of a loop toward said facing sheet, and

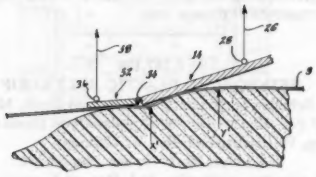
adjusting the location and area of contact between the sagging loop portion of said member and facing sheet in said region downstream of said nip-roll by changing the position of the supporting means at the ends of said member.

4,267,135

PROCESS AND APPARATUS FOR THE CONTINUOUS MOLDING OF POLYMER FOAM BUNSTOCK HAVING A SUBSTANTIALLY RECTANGULAR CROSS-SECTION

Richard M. Stroud, Houston, Tex., and Richard A. Kolakowski, Northford, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Jan. 21, 1980, Ser. No. 113,678
Int. Cl.[3] B29D 27/04
U.S. Cl. 264—51 5 Claims



1. In a process for producing a continuous length of polymer foam bunstock having substantially rectangular cross-section, uniform density and uniform cell structure comprising the steps of:

advancing at a predetermined, constant rate a continuous conveyor surface along a predetermined path of travel, said conveyor surface comprising a lower supporting portion and separate upstanding portions on laterally opposite sides of said lower portion and defining together a generally trough-like moving mold for the developing foam product;

continuously depositing liquid polymer foam forming mixture on the floor of said moving mold at a location near the entrance thereto, said polymer foam forming mixture being one in which two different polymerization reactions are occurring resulting in two distinct rise steps in the foam rise profile the major portion of the total rise prior to gel point taking place in said first step and the minor portion in said second step;

allowing said foam forming mixture to expand freely over the major portion of its expansion; and

causing said expanding foam, at a point approaching the top of said second step of the foam rise and beyond that at which the gel point is reached out before said foam is no longer sufficiently mobile to be molded without distortion of the cell structure, to contact the underside of a panel member having a width substantially coextensive with that of said moving mold and being pivotally mounted, at the downstream end thereof, above said moving mold, said panel member depending from said pivotal mounting and floating freely on said rising foam in tangential contact therewith;

the improvement which comprises:

causing said expanding foam, at a point in the foam rise immediately prior to the gel point, to contact the underside of an extension of said panel member, which extension is pivotally mounted on the upstream end of said panel member, has substantially the same width as said panel member, and is of a length such that said extension can float freely in tangential contact with said rising foam without the leading edge thereof being in contact with said rising foam; and

adjusting the downward pressures exerted by said panel member and said extension thereof so that in combination they cause said rising foam to assume a substantially rectangular cross-section;

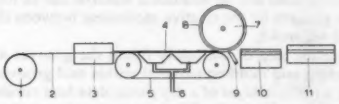
said combination of downward pressures being the only restraining forces applied to the surface of said polymer foam during its entire passage through said trough-like moving mold.

4,267,136

PRODUCTION OF THIN, PLASTIC-REINFORCED, HYDRAULICALLY BOUND BOARDS

Jan M. J. M. Bijen, Munstergeleen, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Filed Aug. 28, 1978, Ser. No. 937,134
Claims priority, application Netherlands, Aug. 30, 1977, 7709522
Int. Cl.[3] B28B 23/00
U.S. Cl. 264—87 6 Claims



1. A continuous process for the manufacture of composite articles consisting of a hydraulically bound material having an extended net plastics material incorporated therein, said process including the successive steps of

(a) contacting a stretched, fibrillated, extended plastics net reinforcing material in the form of a continuous belt with an aqueous suspension of hydraulic binding material thereby forming a thin layer of aqueous suspension on and in the net while adjusting the rate of application and thickness of the thin layer as it is formed;

(b) removing excess water from the thus formed thin layer;

(c) rolling the dewatered thin layer onto a forming roller and continuing such rolling until the predetermined number of continuous net layers desired in the final product are formed in the composite;

(d) removing the rolled composite from the roller when the predetermined thickness is obtained;

(e) shaping the composite; and

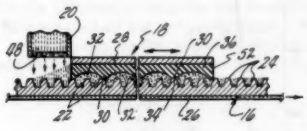
(f) hardening the shaped composite to form the desired shaped composite article.

4,267,137

METHOD FOR MOLDING SHEET MATERIAL WITH PARALLEL RIBS ON ONE SIDE

J. Harold Smith, Amherst, Mass., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 11, 1978, Ser. No. 968,600
Int. Cl.[2] D04H 1/16
U.S. Cl. 264—113 10 Claims



1. In a method for molding sheet material having closely spaced parallel ribs on one side thereof from dry, particulate, heat curable molding material using a mold and a coater, the coater being disposed above the mold, the mold comprising closely spaced parallel grooves therein having the shape of the ribs to be formed, said mold including lands between the grooves, said lands defining the top surface of the mold, said coater including a plurality of spaced apart parallel blades defining a plurality of parallel channels between said blades, said blades including tips parallel to said top surface of the mold and either in contact with said top surface or in close proximity thereto, the steps of:

1. depositing dry particulate heat curable molding material onto said top surface of the mold and within said grooves;

2. uniformly filling the grooves of said mold with said depos-

ited molding material and uniformly compacting said deposited molding material within said grooves by moving the mold relative to the coater in a direction parallel to said top surface of the mold such that a vector representing the direction of motion of the coater relative to said top surface forms an angle of greater than zero degrees with the blades and with the mold grooves, wherein said step of moving the mold brings the said molding material in contact with the coater blades and between the coater and the mold, wherein said steps of depositing, filling and compacting are continued until the grooves are completely filled and no additional material can be forced into the grooves by the relative movement between the coater and the mold;

3. after the step of uniformly filling the grooves and compacting said molding material within said grooves, applying a uniform layer of a dry particulate heat curable molding material over the filled grooves and over the lands of said mold;
4. compacting said applied layer;
5. then, heating the molding material within the grooves and the molding material in the compacted layer to at least partially cure said molding materials to form an at least partially cured ribbed sheet which can be removed from the mold while still retaining its molded shape;
6. removing the at least partially cured ribbed sheet material from the mold; and
7. fully curing said sheet material if not yet fully cured.

4,267,138

COATING ENSURING A CONTROLLED RELEASE OF ACTIVE INGREDIENTS OF BIOLOGICALLY ACTIVE COMPOSITIONS, PARTICULARLY PHARMACEUTICAL COMPOSITIONS AND A PROCESS FOR PREPARATION OF BIOLOGICALLY ACTIVE COMPOSITIONS ENSURING CONTROLLED RELEASE OF ACTIVE INGREDIENTS

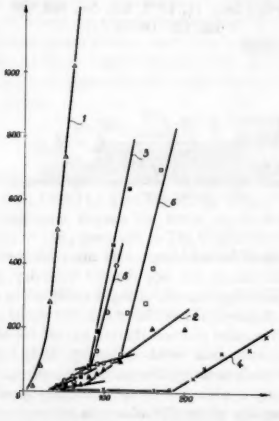
Janos Dobo; Erzsebet Takacs; Gyozo Hortobagyi; Marianne Skvorecz nee Hajnoczy; Ilona Kolbe, and Katalin Hoffmann nee Vas, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Filed Sep. 19, 1977, Ser. No. 834,492

Claims priority, application Hungary, Sep. 17, 1976, 596

Int. Cl.³ A61J *3/10*

U.S. Cl. 264—117 **8 Claims**



1. A process for preparing a pharmaceutical for gastrointestinal release, comprising the steps of:

(a) forming a water-in-oil emulsion from a solution of a varnish-forming polymer substantially unaffected by exposure to gastrointestinal juices in a water-immiscible solvent and an aqueous phase dispersed in the organic phase in particles not more than 20 microns in diameter, said aqueous phase constituting 2 to 30% of the total volume and containing at least one substance selected from the group which consists of a plasticizer, a wetting agent, a buffer and a hygroscopic substance;

(b) coating granules of a pharmaceutical suitable for oral administration with the emulsion formed during step a) and evaporating the solvent to form a coating which substantially retains the aqueous phase of the emulsion dispersed throughout the varnish-forming polymer; and

(c) agglomerating the granules coated during step b) into a pharmaceutical dosage unit.

4,267,139

REINFORCED PLASTIC BELT LOOP

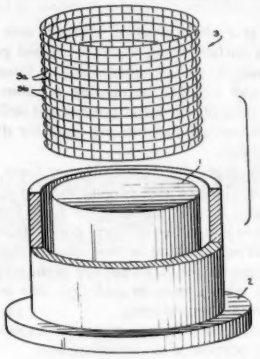
Joachim Scheibe, Laudenbach, and Helmut Kuhn, Mörlenbach, both of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Oct. 10, 1979, Ser. No. 83,276

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1978, 2844907

Int. Cl.³ B29D *29/00*

U.S. Cl. 264—229 **8 Claims**



1. A method for making an endless circumferentially reinforced plastic belt loop, comprising positioning endless shrinkable reinforcement strands circumferenti. !y around a core and shrinking the strands onto the core so that the strands are under tension, casting a hardenable casting plastic in a mold surrounding the core and strands, and hardening the plastic so that it holds the strands under said tension and forms said loop when removed from the core and mold.

4,267,140

METHOD AND APPARATUS FOR SHAPING THERMOPLASTIC SHEETS

James A. Meeker, Toledo, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Mar. 28, 1980, Ser. No. 135,212

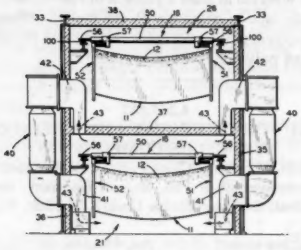
Int. Cl.³ B29C *17/02*

U.S. Cl. 264—291 **11 Claims**

1. A method of shaping a generally rectangular refrigerated thermoplastic sheet having opposite longitudinal and transverse edges comprising: supporting said refrigerated thermoplastic sheet in a substantially vertical plane by clamping the opposite transverse edges thereof such that the opposite longitudinal edges thereof are disposed generally horizontally, heating said sheet while applying lateral tension forces to said opposite transverse edges to stretch said sheet laterally a predetermined amount as said sheet becomes heat-softened, continuing to heat said sheet after stretching said sheet said predetermined amount to cause said sheet to sag and be deflected

intermediate the opposite transverse edges thereof into a desired shape.

5. Apparatus for shaping a generally rectangular refrigerated thermoplastic sheet comprising: a frame having an elongated bar and clamping assemblies carried by said bar in spaced



relation to each other for securing the opposite transverse edges of at least one refrigerated thermoplastic sheet, a pair of supports mounted on said bar, said supports including means mounting said clamping assemblies, respectively, thereon for sliding movement relative thereto, and means on said supports for biasing said clamping assemblies away from each other.

4,267,141

PHENOLIC RESINS WITH IMPROVED LOW TEMPERATURE PROCESSING STABILITY

Myron C. Annis, North Tonawanda, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Division of Ser. No. 30,038, Apr. 13, 1979, Continuation-in-part of Ser. No. 915,335, Jun. 13, 1978, abandoned. This application Dec. 28, 1979, Ser. No. 108,082

Int. Cl.³ B29F *1/00*

U.S. Cl. 264—328.1 **5 Claims**

1. In a runnerless injection molding process wherein a thermosetting resin is fused in the manifold of a runnerless injection molding apparatus and cured in a mold cavity, the improvement which comprises employing as the thermosetting resin component, a phenolic novolak molding composition comprising a phenol-aldehyde resin wherein (a) from about 55% to about 90% of the available theoretical para-phenyl linkages in the resin chain are bridged to a phenyl group, (b) the carbon chains linked between adjacent hydroxyl-substituted phenyl nuclei have 1 to 5 carbon atoms, and (c) the hydroxyl-substituted phenyl nuclei are capable of chain growth at unsubstituted ortho and para-positions of said nuclei; hexamethylenetetramine, and a filler material.

4,267,142

REINFORCED RESIN MOLDING METHOD AND APPARATUS

Jay A. Lankheet, 1329 Bayview Ave., Holland, Mich. 49423

Filed Oct. 22, 1979, Ser. No. 87,008

Int. Cl.³ B29D *9/04*

U.S. Cl. 264—510 **22 Claims**

1. A method for molding plastic articles comprising:

providing male and female mold halves wherein the configuration of the male core and the female cavity correspond generally to the configuration desired for the opposing surfaces of the article to be formed;

locating a flexible bladder over one of said male mold core or said female mold cavity, said bladder having a configuration corresponding to that desired for the surface of the article which is to be formed against said one of said male core or said female cavity;

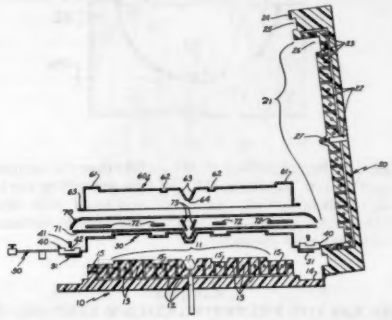
drawing a vacuum between said bladder and its adjacent mold half to hold said bladder in place;

applying a layer of resin over one of said bladder or the other of said male mold core or female mold cavity;

closing said male and female mold halves;

drawing a vacuum between said bladder and said other of said mold members while simultaneously maintaining said vacuum between said bladder and its respective adjacent mold half to thereby draw air out of said resin layer;

followed by releasing said vacuum between said bladder and its respective mold and opening the space between said bladder and its said mold half to a positive pressure rela-



tive to the vacuum being drawn between said bladder and said other mold member, while simultaneously maintaining said vacuum between said bladder and said other mold member to thereby cause said bladder to compress against said resin layer and to force some against said other mold member;

followed by curing said article, opening said mold halves and removing said article from said mold.

4,267,143

PROCESS FOR THE MANUFACTURING OF BIORIENTED HOLLOW BODIES

Gilbert Roullet, Tremblay les Gonesse, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Feb. 8, 1979, Ser. No. 10,218

Claims priority, application France, Feb. 13, 1978, 78 03938

Int. Cl.³ B29C *17/07*

U.S. Cl. 264—516 **17 Claims**

1. Process for producing polyester bioriented hollow articles, comprising depositing at least one layer of polyvinyl alcohol on at least one wall of a polyester tube or preform, drying the deposited layer, and then drawing and blowing the preform in a mold at the orientation temperature of the polyester whereby the adhesion of the polyvinyl alcohol layer to the polyester base is increased and the gas tightness is increased by reason of crystallization of the polyvinyl alcohol during the drawing and blowing step to form the bioriented hollow structure.

4,267,144

PROCESS OF REDUCING BLOWING CYCLE FOR BLOW MOLDED CONTAINERS

Wayne N. Collette, Westmoreland; Suppayan M. Krishnakumar, and Gautam K. Mahajan, both of Nashua, all of N.H., assignors to The Continental Group, Inc., New York, N.Y.

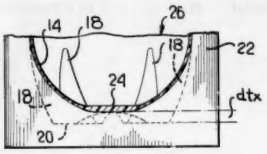
Filed Jul. 3, 1979, Ser. No. 54,500

Int. Cl.³ B29C *17/07*

U.S. Cl. 264—523 **3 Claims**

1. A process of blow molding in a blow mold a plastic material bottle of the type having a generally hemispherical bottom with said bottom having projecting therefrom in circumferentially spaced relation hollow legs terminating in feet depending a selected axial distance below said bottom and forming the sole support for said bottle, said process comprising the steps of providing a mold having an axial spacing in that portion of said mold for producing said bottle between said bottom and said

feet which is greater than said selected axial distance, blow molding a bottle within said mold with a reduction of the cooling time of the blown bottle within said mold as compared to that cooling time required for a bottle formed in a conventional mold with an axial spacing equal to said selected axial



distance to thereby reduce molding cycle time and increase the production rate for said mold, and then permitting the blown bottle to finish cooling outside of said mold with said feet shrinking axially relative to said bottom back to substantially said selected axial distance.

4,267,145

PROCESS FOR PREPARING COLD WATER-SOLUBLE FILMS FROM PVA BY MELT EXTRUSION

Robert D. Wysong, Talleyville, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 739,280, Nov. 5, 1976, abandoned, which is a continuation-in-part of Ser. No. 525,446, Nov. 20, 1974, abandoned, which is a continuation-in-part of Ser. No. 430,554, Jan. 3, 1974, abandoned. This application Aug. 25, 1978, Ser. No. 936,795

Int. Cl.³ B29C *17/07*

U.S. Cl. 264—563 **13 Claims**

1. A process for making a cold water-soluble film 0.5–10 mils thick comprising melt-extruding a composition consisting essentially of 5 to 20 parts by weight of a polyethylene glycol, having an average molecular weight in the range between 325 and 550 (based upon measurement of the hydroxyl content thereof obtained by esterification of said glycol with phthalic anhydride/pyridine), in 100 parts by weight of a low molecular weight polyvinyl alcohol which is about 85 to about 90 mol% hydrolyzed (determined by saponification) and has a viscosity in the range between about 3 and about 10 cps as measured on a 4% aqueous solution at 20° C. (determined by the Hoeppler Falling Ball Method ASTM-D 1343-56, Part 8).

4,267,146

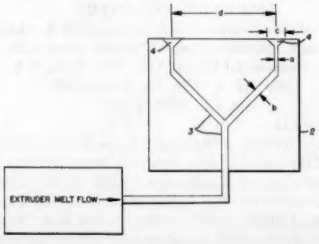
METHOD FOR REDUCING MELT FRACTURE DURING EXTRUSION OF ETHYLENE POLYMERS

Stuart J. Kurtz, Somerset; Theodore R. Blakeslee, III, Hillsborough, and Leonard S. Scarola, Union, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jan. 8, 1979, Ser. No. 1,932

Int. Cl.³ B29D *23/04*

U.S. Cl. 264—564 **12 Claims**



1. A process for reducing sharkskin melt fracture during extrusion of a molten narrow molecular weight distribution ethylene polymer into film form under film forming conditions of flow rate and melt temperature which would otherwise produce sharkskin melt fracture, which comprises extruding said polymer through a die having a die gap greater than about 50 mils and wherein at least a portion of one surface of the die lip and/or die land in contact with the molten polymer is at an angle of divergence or convergence relative to the axis of flow of the molten polymer through the die.

4,267,147

METHOD FOR PRODUCING FIBER REINFORCED STRUCTURE COMPONENTS

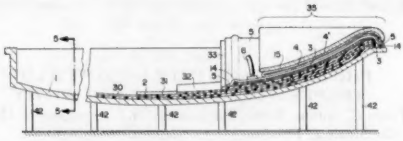
Dieter Pogoda, Hamburg; Claus Petters, Brekendorf, and Arno Rost, Diemelsee, all of Fed. Rep. of Germany, assignors to Messerschmit-Boelkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 846,816, Oct. 31, 1977, abandoned. This application Sep. 6, 1979, Ser. No. 72,890

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1976, 2650859

Int. Cl.³ B29C *3/00*

U.S. Cl. 264—571 **7 Claims**



1. A method for producing a large structural component of fiber reinforced mats which are pre-impregnated by thermosetting synthetic material and which are applied to a conventional mold, comprising the steps of:

(a) applying strips of said fiber reinforced mats to a first surface area of a mold to build-up a given thickness of several layers in said first surface area and repeating said applying on further surface areas,

(b) applying pressure to said mats on said first surface area where the mats have reached said given layer thickness, for pressing said mats to the mold by covering said first surface area with a flexible means, providing a vacuum seal between said flexible means and said first surface area around the edges of said first surface area and evacuating the space between said flexible means and said first surface area,

(c) heating, outside an autoclave, said first surface area where the mats have reached said given layer thickness for curing said mats in said first surface area, and

(d) sequentially repeating said applying of pressure and heat for said curing on said further surface areas where said given layer thickness has meanwhile been reached, whereby the structural component is formed in a continuously advancing yet stepwise manner, so that said structural component may be cured by said thermosetting without regard to the size of available autoclaves, prior to its removal from the mold.

4,267,148

CORROSION MONITORING AND TESTING SYSTEM

Leon L. Dickson, and Bart T. Ellison, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 10, 1979, Ser. No. 101,969

Int. Cl.³ G01N *17/00*

U.S. Cl. 422—53 **12 Claims**

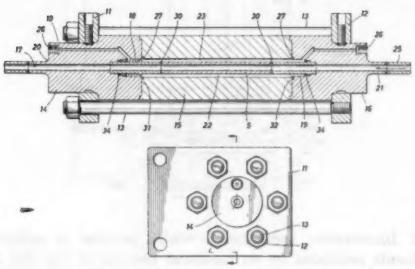
1. Apparatus for monitoring the effects of certain corrosive fluids, comprising:

a sample tube divided along its axis into at least two parts,

said parts having substantially the same mass as said tube before division, said tube having a finite inner diameter;

means for holding said sample tube having a fluid passageway therethrough substantially equal to said sample tube inner diameter, said means sealingly engaging said sample tube at each end such that fluid flow through said holding means and said sample tube occurs without restriction; said means for holding said sample tube comprising a main body for enclosing said sample tube having an opening therethrough of a larger cross-section than the cross-section of said sample tube, said opening comprising a fluid chamber;

a first body portion for joining said main body at one end in alignment with said opening having a passageway therethrough at least part of which has the same diameter as the



inner diameter of said sample tube, said first body portion providing for connecting to corrosive fluid flow;

a second body portion for joining said main body at its other end in alignment with said opening having a passageway therethrough at least part of which has the same diameter as the inner diameter of said sample tube, said second body portion providing for connecting to corrosive fluid flow; and,

means for clamping said first body portion, said main body, and said second body portion in a longitudinal orientation for fixedly supporting said sample tube within said fluid chamber, whereby said holding means may be dismantled and the sample tube parts examined for effects of corrosion after the corrosive fluid has been passed through said sample tube.

4,267,149

EVALUATION INSTRUMENT FOR AUTOMATIC PHOTOMETRIC ANALYSIS OF LIQUID SAMPLES

Elmar Bruckner, Bischberg; Hans Gausmann, Aalen; Philipp Schipper, Erlangen, and Walter Tausch, Aalen, all of Fed. Rep. of Germany, assignors to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

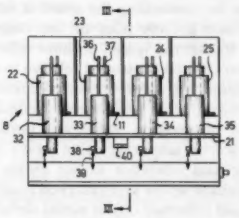
Filed Jan. 31, 1979, Ser. No. 8,038

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1978, 2804881

Int. Cl.³ G01N *35/02, 33/50, 21/11*

U.S. Cl. 422—65 **11 Claims**

1. An evaluation instrument for the automatic analysis of a liquid specimen pursuant to a prescribed analysis program, said instrument comprising a specimen container, a specimen vessel, intermittently operative conveyor means for indexing the specimen vessel into consecutive positions, specimen-feeding means having an inlet connection to said specimen container and a discharge outlet at one of said positions for transferring to said specimen vessel when in said one position a predetermined volume of a liquid specimen from said specimen container, reagent-feeding means at another of said positions for supplying to said specimen vessel when in said other position a predetermined reagent dose, the reagent dose having been selected in accordance with the specific analysis to be performed, photometer means for measuring the specimen with instrument parameters adapted to the specific analysis, specimen-transfer means associated with said photometer means and operative at a further conveyor position to transfer reagent-mixed specimen liquid from said specimen vessel to said photometer means upon indexed displacement to said further position; said reagent-feeding means comprising a replaceably disposed holder having a plurality of different reagent containers for the respective different reagents necessary for the specific analysis, a separate metering pump associated with each



reagent container and operative to transfer reagent from a particular reagent container to said specimen vessel, said holder incuding pre-coded means unique to the specific analysis to be performed; and control means having a synchronizing connection to said conveyor means and a code-reading relation to the pre-coded means of an installed holder, as well as actuating connections to said specimen-feeding means and to said reagent-feeding means and to said photometer means, for determining the entire course of the specific analysis prescribed by said pre-coded means.

4,267,150

SPLASH GUARD DEVICE

Raymond A. Firestone, 60 Hunter Ave., Fanwood, N.J. 07023

Filed Aug. 30, 1979, Ser. No. 70,967

Int. Cl.³ B64C *27/42*

U.S. Cl. 422—103 **9 Claims**

1. A splash guard device which comprises a tube having one imperforated end and one open end; at least one void on the side of the tube adjacent the imperforated end and a joining means attached to the open end of said tube; said joining means having an outer surface means for sealing said splash guard device to a reboiling means for a distillation operation and an inner surface means for sealing said splash guard device to a condensing means for a distillation operation.

4,267,151

APPARATUS FOR CRYSTAL GROWTH CONTROL

Douglas A. Yates, Burlington; Arthur E. Hatch, Waltham, and Jeff M. Goldsmith, Medford, all of Mass., assignors to Mobil Tyco Solar Energy Corporation, Waltham, Mass.

Filed Jun. 14, 1978, Ser. No. 915,443

Int. Cl.³ C30B *15/36*

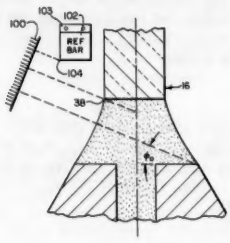
U.S. Cl. 422—105 **16 Claims**

1. In an apparatus for growing a crystalline body of selected material from a growth pool of melt so that said body has a selected cross-sectional shape for some preselected distance

along its length, said growth pool being characterized by a meniscus which joins said body at said growth pool providing a junction therebetween said apparatus comprising observation means spaced from said junction for observing said junction at an angle where a contrast is provided by differing amounts of reflected radiation from the respective surfaces of said meniscus and body at said junction; position determining means coupled to said observation means for determining the spatial position where the observed contrast between said meniscus and body occurs; and means responsive to said position determining means for controlling the speed at which the body is pulled from said growth pool or the temperature of said growth pool so that the spatial position where said observed constrast occurs can be controlled relative to a predetermined reference position, the improvement comprising;

reference object means positioned a predetermined distance from said observation means and positioned near said junction so that said observation means is also capable of observing said reference object means relative to the spatial position where said observed contrast occurs, such that (1) said reference object means defines said predetermined reference position and (2) shifts in the observed position of said junction due to convection currents between said junction and said observation means will be accompanied with similar shifts in the observed position of said reference object.

10. Apparatus for growing a crystalline body of selected



material from a growth pool of melt so that said body has a selected cross-sectional shape for some preselected distance along its length, said growth pool being characterized by a meniscus which joins said body at said growth pool providing a junction therebetween, said apparatus comprising:

means containing said growth pool;

reference object means positioned adjacent the junction where said meniscus meets said body;

observation means positioned a predetermined distance from said junction and said reference object for observing said body, said reference object means and said meniscus along an axis where an observable contrast between said body and meniscus is provided and the reference object means appears spaced from the junction and provides a contrast with the observed portion of said meniscus or said body spaced between the junction and reference object;

means for determining a first spatial position where a sharp contrast in reflected radiation occurs between said junction and said observed portion and a second spatial position where a sharp contrast in reflected radiation occurs between said observed portion and said reference object means;

means for referencing said first spatial position relative to said second spatial position; and

means for controlling the speed at which said body is pulled from said growth pool or the temperature of said growth pool so that said first spatial position can be controlled relative to said second spatial position.

4,267,152

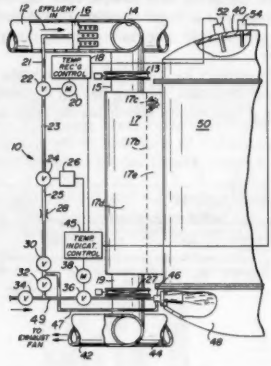
ANTI-POLLUTION THERMAL REGENERATION APPARATUS

Edward H. Benedick, Morristown, N.J., assignor to Regenerative Environmental Equipment Co., Inc., Morris Plains, N.J.

Filed Jul. 25, 1979, Ser. No. 60,494

Int. Cl.[3] **F23G** *7/06*

U.S. Cl. 422—111 **10 Claims**



1. Incineration apparatus to which noxious or polluting effluents produced by an industrial process or the like are applied for purification and in which there is a combustion chamber normally heated by a main heat source, the combination comprising:

(a) means for detecting when the temperature within said chamber attains a predetermined level,

(b) means outside of said combustion chamber for uniformly distributing a combustible fuel gas with substantially all of said effluents when said predetermined level has been attained and detected by said detecting means, and

(c) means coupled to said means for uniformly distributing said fuel gas for applying said effluents with or without said uniformly mixed fuel gas into said chamber.

4,267,153

GRAVITY DAMPENED GUIDANCE SYSTEM

Aaron S. Taylor, Acton, Mass., assignor to Mobil Tyco Solar Energy Corporation, Waltham, Mass.

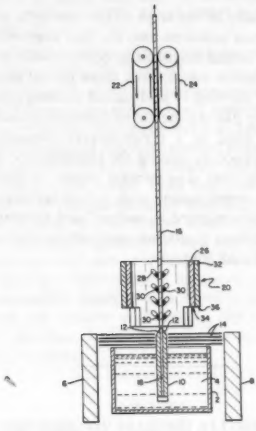
Filed Aug. 9, 1979, Ser. No. 65,281

Int. Cl.[3] **C30B** *35/00, 15/34*

U.S. Cl. 422—249 **16 Claims**

1. In combination with apparatus for growing a continuous substantially flat crystal from a melt material, said apparatus including means for establishing a pool of said melt material and crystal pulling means vertically supported above said means for establishing said pool for pulling said crystal from said pool, a crystal growth guidance mechanism located between said means for establishing said pool and said crystal pulling means, said crystal growth guidance mechanism comprising a first plurality of guide rods, each respectively mounted on a corresponding one of a like plurality of pairs of spaced-apart ramped supports, said guide rods of said first plurality being spaced vertically apart with respect to one another, a second like plurality of guide rods, each respectively mounted on a corresponding one of a second like plurality of pairs of spaced-apart ramped supports, said guide rods of said second plurality being spaced vertically apart with respect to one another and disposed with respect to said first plurality of guide rods such that each guide rod of said first plurality opposes and is spaced from a corresponding guide rod of said second plurality by a predetermined spacing, the predetermined spacings between said first and second plurality of guide rods being such so as to define therebetween a vertically ex-

tending passageway between said means for establishing said pool and said crystal pulling means for guiding said crystal as it is pulled from said pool, said passageway having a width slightly less than the thickness of the crystal to be grown, said first and second pluralities of guide rods each having sufficient mass and number so that (1) when acting in unison said rods



will provide sufficient resistance to prevent induced motion from being translated down the crystal to the top of said pool as said crystal is pulled from said pool, and (2) each guide rod will be moved against the force of gravity relative to the corresponding pair of ramped supports supporting the rod by localized surface perturbations in said growing crystal.

4,267,154

APPARATUS FOR MANUFACTURING HIGH QUALITY CRYSTALS

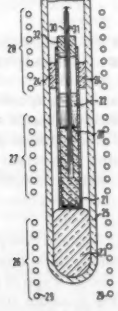
Georg Mueller, Birkenstr. 17, 8521 Langensendelbach, and Herbert Weiss, Normannenstr. 26, 8000 Munich 81, both of Fed. Rep. of Germany, assignors to Georg Mueller, Langensendelbach and Herbert Weiss, Munich, both of, Fed. Rep. of Germany

Filed Aug. 20, 1979, Ser. No. 68,219

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1978, 2842605

Int. Cl.³ C30B *35/00*

U.S. Cl. 422—249 **4 Claims**



1. An apparatus for manufacture of highly quality crystals comprising:

(a) a centrifuge means having a horizontally operated arm;

(b) a temperature controllable crystal growth system positioned on said arm in a rotatable and tiltable manner;

(c) a furnace trap mounted on said centrifuge in a symmetrical fashion relative to the center of rotation;

(d) a shunt-motor operationally coupled to said centrifuge means for driving said centrifuge;

(e) an electromagnetic proximity switch in operational association with said centrifuge for measuring the number of revolutions of said centrifuge;

(f) a current supply means operationally associated with said crystal growth system;

(g) thermo-couples operationally associated with said crystal growth system for regulating and sensing the temperature thereof;

(h) acceleration-proof amplifiers positioned on said centrifuge arm for providing thermo-electrical voltages to said crystal growth system; and

(i) a slip ring system mounted on said centrifuge means and operationally associated with said crystal growth system and said amplifiers for transmitting the thermo-electrical voltage from said amplifiers to said crystal growth system.

4,267,155

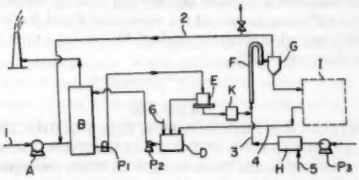
PROCESS FOR CLEANING FLUE GAS

Yoshio Kobayashi, Yokohama; Koichi Ando, Chigasaki, and Susumu Hyodo, Hiratsuka, all of Japan, assignors to Mitsubishi Kakoki Kaisha Ltd., Toyko, Japan

Filed Aug. 20, 1979, Ser. No. 67,772

Int. Cl.³ B01D *53/34*

U.S. Cl. 423—235 **5 Claims**



1. In a process for cleaning a flue gas containing SO_x, NO_x and O_2 by washing with an alkaline aqueous solution containing a NO_x removal catalyst, wherein a dithionate, a sulfate and an imidobissulfate, formed in said washing step are separated as their crystals, the improvement comprising heating the crystals to a temperature higher than the pyrolysis temperature of the dithionate but lower than the pyrolysis temperatures of the imidobissulfate to form a solid product and a gas containing SO_2, separating the gas containing SO_2 and feeding it into said alkaline aqueous solution for washing the flue gas whereby the SO_2 gas produced by the pyrolysis is effectively utilized for NO_x removal.

4,267,156

METHOD USING LIME SLURRY FOR REGENERATING SODIUM SULFITE IN DOUBLE ALKALI FLUE GAS DESULFURIZATION PROCESS

Leonard Dauerman, Ft. Lee; Krishna K. Rao, Paterson; Joseph C. Dabbs, Fort Lee, and Brian Delaney, Roseland, all of N.J., assignors to The Foundation at New Jersey Institute of Technology, Newark, N.J.

Filed Jul. 11, 1979, Ser. No. 56,467

Int. Cl.³ C01B *17/00*

U.S. Cl. 423—242 **8 Claims**

1. In a flue gas desulfurization process wherein sulfur dioxide is reacted in a scrubber with an alkaline solution of sodium to form a sodium bisulfite solution, and wherein the sodium bisulfite solution is reacted with a lime slurry to regenerate the sodium solution for recycling to the scrubber, said slurry com-

prising lime particles of a predetermined size and a water carrier with said particles having a tendency to settle out of the water carrier at a predetermined velocity of the slurry, the improvement in the regenerating phase of the process comprising the steps of:

producing a stream of a lime slurry flowing at a rate greater than said particle settling velocity,

producing a stream of a sodium bisulfite solution flowing at a rate in relation to said lime slurry stream, and

simultaneously conflowing said streams into a bifurcated mixing nozzle having a pair of inlets for said streams and a common outlet to cause the lime to react with the sodium bisulfite in the nozzle to produce an effluent comprising a calcium sulfite precipitate and a regenerated alkaline solution of sodium.

4,267,157

PROCESS OF PREPARING METAL PHOSPHORUS TRISULFIDES

Edward T. Maas, Jr., Kendall Park, and John J. Steger, Scotch Plains, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Nov. 14, 1979, Ser. No. 103,536

Int. Cl.[3] **C01B** *25/14*

U.S. Cl. 423—303 **8 Claims**

1. A process for producing metal phosphorus trisulfides of the formula MPS_3 wherein M is a metal selected from the group consisting of Mg, Ca, Sr, V, Mn, Fe, Co, Ni, Pd, Zn, Cd, Hg, Sn, Pb, Sm, Eu, Yb and mixtures thereof, said process comprising contacting, in a reaction zone, phosphides of said metals of the formula M_xP_y wherein the ratio of y/x ranges between $\frac{1}{8}$ to 5/1 with one or more compounds of the formula PS_z wherein z ranges from 1–3, said PS_z being present in the reaction zone as a liquid in equilibrium with its vapor and in an amount sufficient to exceed the amount of P and S stoichiometrically required to form the desired MPS_3, for a time sufficient to produce said MPS_3.

4,267,158

CONTINUOUS PROCESS FOR THE PRODUCTION OF AMORPHOUSE SODIUM ALUMINOSILICATE

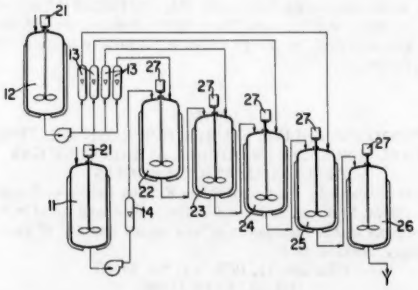
Peter Christophliemk, Dusseldorf; Willi Wüst, Ratingen-Hoesel, and Franz-Josef Carduck, Haan, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf and Deutsche Gold-und Silber-Scheideanstalt Vormals Roessler, Frankfurt am Main, both of, Fed. Rep. of Germany

Filed Mar. 5, 1980, Ser. No. 127,382

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1979, 2910147

Int. Cl.[3] **C01B** *33/26, 33/28*

U.S. Cl. 423—329 **12 Claims**



1. A process for the continuous production of an aqueous, alkaline suspension of x-ray amorphous sodium aluminosilicate having a small particle size of at least 99% by volume of a particle size of less than 50μ, suitable for conversion into zeolite sodium aluminosilicate of the smallest particle sizes, by mixing an aqueous sodium aluminate solution with an aqueous sodium silicate solution in the presence of excess sodium hydroxide solution at a temperature in the range of from 20° to 103° C., where the solutions being mixed have a mathematical total molar ratio of:

$$1.5 \text{ to } 9\ Na_2O{:}1\ Al_2O_3{:}1 \text{ to } 7\ SiO_2{:}40 \text{ to } 400\ H_2O$$

consisting essentially of the steps of continuously passing one of said two aqueous solutions into the first zone of a progressively, separately zoned mixing area, continuously splitting the other aqueous solution into at least three partial streams, continuously passing the first of said partial streams into said first zone, continuously passing the mixed contents of said first zone into the second zone of a progressively, separately zoned mixing area, continuously passing the remainder of said partial streams separately into downstream zones of said progressively, separately zoned mixing area, where said mean holding time of the reaction mixture in each of said separately zoned mixing areas is at least 5 seconds and sufficient to effect substantial mixing of said contents.

4,267,159

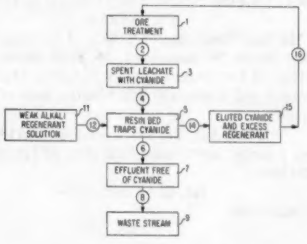
CYANIDE RECOVERY

George J. Crits, Havertown, Pa., assignor to Crane Co., New York, N.Y.

Filed Aug. 8, 1980, Ser. No. 176,355

Int. Cl.[3] **C01C** *3/08;* **B01J** *41/04;* **C02F** *1/42;* **C22B** *3/00*

U.S. Cl. 423—371 **17 Claims**



1. In treatment of particulate ore with aqueous liquor comprising cyanide to segregate minerals therefrom, wherein spent aqueous liquor is discharged subsequently, the improvement comprising the steps of passing the spent liquor through a bed of Type II strong-base anion-exchange resin and thereby removing and retaining cyanide present in the liquor, subsequently passing weak alkaline regenerant solution through the bed and thereby eluting cyanide therefrom and regenerating the resin, and recycling the regenerant solution with eluted cyanide for further ore treatment.

12. Process of separating free and complexed cyanide anions from aqueous liquor containing both, comprising passing such aqueous liquor through a bed of Type II anion-exchange resin and thereby segregating the cyanides from the effluent from the bed, passing weak base or salt solution at intervals through the bed and thereby eluting the free cyanide, then passing strong base or salt solution through the bed and thereby eluting the complexed cyanide.

4,267,160

CARBON BLACK FOR LOW-HYSTERESIS RUBBER COMPOSITIONS

Gerard Kraus, and Harold R. Hunt, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 822,779, Aug. 8, 1977, abandoned, which is a division of Ser. No. 681,977, Apr. 30, 1976, Pat. No. 4,071,496. This application Sep. 17, 1979, Ser. No. 75,874

Int. Cl.[3] C01B *31/02;* C09C *1/48*

U.S. Cl. 423—456 10 Claims

1. A process for making carbon black having a tint residual −6 or less, comprising the steps of:

(a) passing a vortex of hot combustion gases through a reaction flow passage in a carbon black reactor having in series a first section of a first diameter, a second section having an inlet of a second diameter smaller than said first diameter and an outlet of a third diameter, and a third section of a fourth diameter larger than said third diameter, said reaction flow passage abruptly widening from said second section to said third section so that by passing the vortex of hot combustion gases from said second section to said third section said gases are rapidly expanded; and

(b) introducing a hydrocarbon feedstock radially into said hot combustion gases at a location in said third section adjacent the reactor wall and in the proximity of the abrupt diameter change between the second section and the third section.

4,267,161

METHOD OF MAKING ALUMINUM CHLOROHYDRATE

William C. Ziegenhain, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Filed Apr. 21, 1980, Ser. No. 142,587

Int. Cl.[3] C01F *7/56, 7/02*

U.S. Cl. 423—462 8 Claims

1. A method for preparing aluminum chlorohydrate comprising

(a) reacting aluminum alkoxides with methanol at a temperature of from about 130° F. to about 450° C. for a time sufficient to form solid aluminum methoxide in a liquid phase,

(b) washing the aluminum methoxide recovered with methanol to remove higher alcohols, then recovering solid aluminum methoxides from the liquid phase, and

(c) reacting aluminum methoxide with aqueous hydrochloric acid for a time and at a temperature sufficient to form aluminum chlorohydrate.

4,267,162

PROCESS AND APPARATUS FOR THE EXPLOITATION OF THE SULFUR COMPOUNDS CONTAINED IN GASES CONTAINING OXYGEN AND A HIGH WATER VAPOR CONTENT

Franz Maier, Markt Schwaben, Fed. Rep. of Germany, assignor to Süd-Chemie Aktiengesellschaft, Lenbachplatz, Fed. Rep. of Germany

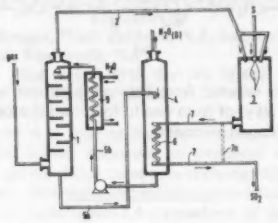
Continuation of Ser. No. 646,825, Jan. 6, 1976, abandoned. This application May 7, 1979, Ser. No. 36,958

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1975, 2501419

Int. Cl.[3] B01D *19/00;* C01B *17/52, 17/54*

U.S. Cl. 423—542 17 Claims

1. Process for the exploitation of the sulfur compounds of gases, said sulfur compounds consisting essentially of hydrogen sulfide or hydrogen sulfide mixed with organic sulfur compounds selected from the group consisting of CS_2, COS and mercaptans, said gases also containing oxygen in an amount sufficient to oxidize said hydrogen sulfide and water vapor in an amount corresponding to a relative humidity of from 30 to 100 percent, which comprises removing water vapor by treating the gases having temperatures of from 20 to 70° C. at atmospheric pressure with an ethylene glycol, and using the dried gas, still containing said sulfur compounds, as an oxidation gas for the burning of sulfur or for the roasting of



sulfidic ores in the production of highly concentrated sulfuric acid.

4,267,163

CARNITINE AND ITS USE IN REDUCING CARDIAC TOXICITY

Stephen L. De Felice, Westfield, N.J., assignor to Biocarn Limited, New York, N.Y.

Continuation-in-part of Ser. No. 681,063, Apr. 28, 1976, Pat. No. 4,075,352, which is a continuation-in-part of Ser. No. 485,301, Jul. 2, 1974, Pat. No. 3,968,241, which is a continuation-in-part of Ser. No. 303,772, Nov. 6, 1972, Pat. No. 3,830,931. This application May 23, 1977, Ser. No. 799,473

Int. Cl.[3] A61K *49/00, 31/70, 31/71, 31/195*

U.S. Cl. 424—9 8 Claims

1. A method of reducing cardiac toxicity in humans which results from the administration to such human of a cytostatic compound selected from the group consisting adriamycin, adriamycin-14-octanoate, 4'-epi-adriamycin, adriamycin β-anomer and 4'-epi-adriamycin β-anomer which comprises administering to said human in combination with said cytostat an amount of β-hydroxy-γ-trimethylaminobutyric acid, an isomer thereof, a pharmaceutically acceptable salt thereof or a pharmaceutically acceptable salt of an isomer thereof sufficient to reduce cardiac toxicity.

4,267,164

EFFERVESCENT STANNOUS FLUORIDE TABLET

Kuo-Chen Yeh, Westfield, N.J., and Frank Mazzella, Brooklyn, N.Y., assignors to Block Drug Company Inc., Jersey City, N.J.

Filed Jan. 31, 1980, Ser. No. 117,124

Int. Cl.[3] A61K *7/18, 9/46, 33/16*

U.S. Cl. 424—44 8 Claims

1. An effervescent stannous fluoride containing dental tablet comprising stannous fluoride and an effervescent couple consisting essentially of malic acid and an alkali metal bicarbonate in a weight ratio of about 3:2.

4,267,165

COMESTIBLES SWEETENED WITH ALPHA AMINO ACID DIHYDROCHALCONES

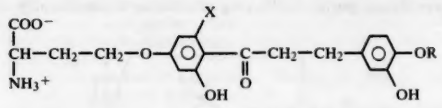
Grant E. DuBois, Palo Alto; Rebecca A. G. Stephenson, Redwood, and Guy A. Crosby, Palo Alto, all of Calif., assignors to Dynapol, Palo Alto, Calif.

Division of Ser. No. 19,054, Mar. 9, 1979, and a continuation-in-part of Ser. No. 19,054, Mar. 9, 1979. This application Dec. 12, 1979, Ser. No. 102,694

Int. Cl.[3] A23L *1/236;* A23G *3/30;* A61K *7/16*

U.S. Cl. 424—48 11 Claims

1. A sweetened comestible comprising a comestible material in admixture with a concentration of a dihydrochalcone represented by the formula



wherein X is selected from between hydrogen and hydroxy and R is an alkyl of from one to four carbon atoms, which is effective to impart sweetness.

4,267,166

CYCLODEXTRINS AS MALODOROUS BREATH REDUCING AGENTS

Mizuo Yajima, Tokyo, Japan, assignor to Asama Chemical Co., Ltd., Tokyo, Japan

Filed Mar. 5, 1980, Ser. No. 127,300
Claims priority, application Japan, Mar. 13, 1979, 54-28281
Int. Cl.[3] A61K *7/16, 7/32, 9/68;* A61L *9/01*
U.S. Cl. 424—48 10 Claims

1. A method for treating a human being having pre-existing malodorous breath which comprises orally administering to said human being, an effective, malodor-reducing amount of a composition containing, as an effective malodor-reducing ingredient, from 0.5 to 50% by weight of cyclodextrin, with the balance of said composition being edible carrier safe for oral administration to human beings, said composition being in the form of edible particles, an edible troche, an edible liquid, chewing gum or toothpaste.

4,267,167

THIXOTROPIC TOPICAL FLUORIDE-PHOSPHATE GEL COMPOSITIONS USEFUL FOR THE PREVENTION OF DENTAL CARIES

Stewart Weitzman, Portland, and Roy D. Archibald, Gresham, both of Oreg., assignors to Cooper Care, Inc., Palo Alto, Calif.

Continuation of Ser. No. 626,068, Oct. 28, 1975, abandoned.
This application May 27, 1980, Ser. No. 153,089
Int. Cl.[3] A61K *7/18, 33/16, 33/42*
U.S. Cl. 424—52 6 Claims

1. A fluoride-phosphate dental composition useful for topical application to the teeth for the control of dental caries, comprising a fluoride compound which is soluble in water to provide a source of fluoride ions under acid conditions, an acid phosphate compound which is soluble in water to provide a source of phosphate ions, a thixotropic constituent, and water, said thixotropic constituent serving to impart thixotropic properties to the resulting composition so that it exhibits fluid properties when agitated so as to facilitate its dispensation from a bulk container into a dental applicator tray but, when immobilized, sets up on the tray in a few seconds into a gel-like substance which penetrates to interproximal surfaces of all teeth with which it comes in contact and which, when followed by inversion and insertion of the tray in the mouth cavity over the lower teeth, will not drip, run or thin out in the presence of saliva for a sustained period of time of at least five minutes duration, said thixotropic constituent being compatible with fluoride ions under acid conditions and stable in pH range of approximately 3.0 to 4.5 and being within the range of 3.5 to 12% by weight of said fluoride-phosphate composition.

4,267,168

METHOD OF REDUCING BACTERIA ON HUMAN TISSUE USING LIQUID BIOCIDAL COMPOSITIONS COMPRISING A MIXTURE OF SILVER IONS AND SODIUM PECTATE

James W. Van Leuven, Duarte, Calif., assignor to Aquatain Partnership, Arcadia, Calif.

Division of Ser. No. 776,776, Mar. 11, 1977, Pat. No. 4,184,974, which is a continuation-in-part of Ser. No. 693,622, Jun. 7, 1976, abandoned, which is a continuation of Ser. No. 470,629, May 16, 1974, abandoned. This application Sep. 17, 1979, Ser. No. 75,979
Int. Cl.[3] A01N *1/00, 59/16*
U.S. Cl. 424—75 12 Claims

1. A method for treating external tissue of a human body to reduce bactericidal count comprising the step of applying to such tissue a liquid biocidal composition comprising:

dodecyl benzene sulfonic acid or water soluble salt thereof in the range of from about 2.5 to 6% by weight;

lauryl diethanolamide in the range of from about 2.7 to about 6.5% by weight;

triethanolamine in the range of from about 1.1 to 3.0% by weight;

propylene glycol in the range of from about 1.2 to about 2.5% by weight;

glycerine in the range of from about 4 to about 10% by weight;

sodium polypectate in the range of from about 100 to about 400 parts per million;

silver ion in the range of from about 13 to about 250 parts per million;

sufficient ammonium hydroxide to maintain a pH in the range of from about 7.2 to about 7.8; and

a balance primarily of sterile distilled water substantially free of alkaline earth cations, halide ions, and strong acid anions.

4,267,169

NOVEL PREPARATION OF CLOTRIMAZOLE

Takuzo Kamishita, and Kazuhiko Kamishita, both of Takatsuki, Japan, assignors to Toko Yakuhin Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jul. 12, 1979, Ser. No. 56,978
Claims priority, application Japan, Jul. 22, 1978, 53-89787; Jul. 22, 1978, 53-89788; Jul. 22, 1978, 53-89789
Int. Cl.[3] A61K *31/74, 31/415, 31/165*
U.S. Cl. 424—78 13 Claims

1. A preparation useful for external treatment of trichophytoses, which comprises a solution of clotrimazole in crotamiton in admixture with a carrier or diluent, wherein said clotrimazole is contained in an amount of 0.5 to 2% by weight and said crotamiton is contained in an amount of 2 to 10% by weight, based upon the total weight of the preparation.

11. A process for preparing a transparent gel preparation useful for external treatment of trichophytoses, which comprises dissolving clotrimazole in crotamiton, adding thereto ethanol or ethanol containing less than 40% by weight of propylene glycol and an aqueous solution of a carboxyvinyl polymer, and then neutralizing the mixture with a basic substance to a pH of 4 to 10, said gel preparation comprising 0.5 to 2.0% by weight of clotrimazole, 2 to 10% by weight of crotamiton, 30 to 70% by weight of ethanol or propylene glycol-containing ethanol, 0.1 to 3.0% by weight of the carboxyvinyl polymer, and remainder of water, and having a pH of 4 to 10 and a viscosity of 2,000 to 100,000 cps at 20° C.

4,267,170

METHODS OF USING CHLAMYDIA VACCINE FOR PREVENTING AND TREATING BOVINE DISEASES

Albert C. Seawell, 1047 Carol Ave., Ripon, Wis. 54971

Filed Sep. 6, 1979, Ser. No. 73,004
Int. Cl.[3] A61K *39/118*
U.S. Cl. 424—88 17 Claims

1. A method of immunizing and treating bovines against *chlamydia psittaci* which comprises parenterally administering modified live Chlamydia feline pneumonitis vaccine to the bovines to stimulate the production of antibodies therein.

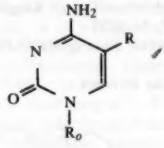
4,267,171

C-5 SUBSTITUTED CYTOSINE NUCLEOSIDES

Donald E. Bergstrom, Davis, and Jerry L. Ruth, Encinitas, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

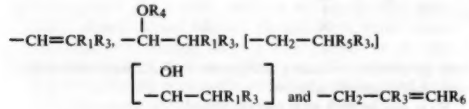
Filed Jul. 2, 1979, Ser. No. 53,943
Int. Cl.[3] A61K *31/70*; C07H *17/00*
U.S. Cl. 424—180 7 Claims

1. A compound of the formula



(I)

wherein R_o is β-D-ribofuranosyl, β-D-2-deoxyribofuranosyl or β-D-arabinofuranosyl and R is selected from the group consisting of



wherein R_1 is hydrogen; R_3 is hydrogen or methyl; R_4 is C_{1-4} lower alkyl; R_6 is hydrogen; and the pharmaceutically acceptable acid addition salts thereof.

4,267,172

BIS(TRIORGANOSILYLALKYL) PHOSPHITES

Shigeshi Toyoshima, Funabashi; Ryuichi Sato, Urawa; Koichi Ito, Higashi Kurume; Toshio Shinohara, and Masatoshi Arai, both of Annaka, all of Japan, assignors to Shin-Etsu Chemical Co. Ltd., Tokyo, Japan

Filed Sep. 25, 1979, Ser. No. 78,772
Claims priority, application Japan, Sep. 26, 1978, 53-118491
Int. Cl.[3] A01N *55/00*; C07F *9/02, 7/08*
U.S. Cl. 424—184 15 Claims

1. A bis(triorganosilylalkyl) phosphite represented by the general formula

$$[R_3Si(CH_2)_nO]_2POH,$$

where R is a monovalent hydrocarbon group having from 1 to 6 carbon atoms and n is a number of 1, 2 or 3.

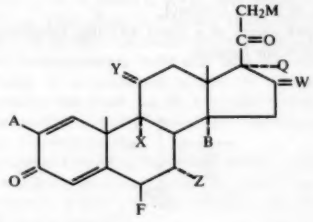
4,267,173

USE OF 6β-FLUORO-7α-HALOGENOCORTICOIDS AS TOPICAL ANTI-INFLAMMATORIES AND PHARMACEUTICAL FORMULATIONS USEFUL THEREFOR

Richard W. Draper, North Caldwell, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Filed Nov. 5, 1979, Ser. No. 91,612
Int. Cl.[3] A61K *31/58*
U.S. Cl. 424—243 17 Claims

1. The method of treating an inflammatory condition in a warm-blooded animal responsive to treatment with anti-inflammatory agents, which comprises applying topically to the inflamed area, a non-toxic, anti-inflammatory-effective amount of a 6β-fluoro-7α-halogeno-1,4-pregnadiene of the following formula I together with a non-toxic, pharmaceutically acceptable carrier:



I

wherein A is hydrogen, or when Y is (H,β—OH), then A is also chlorine, bromine or methyl;

B is hydrogen, or taken together with Q is 14α,17α-alkylidenedioxy;

X is a member selected from the group consisting of hydrogen, fluorine and chlorine;

Y is (H,β—OH), (H,β—OCOH), or when X is chlorine then Y is also (H,β—fluorine) or (H,β-chlorine);

Z is halogen;

Q is OV wherein V is hydrogen or an acyl radical of a hydrocarboncarboxylic acid having up to 8 carbon atoms;

W is a member selected from the group consisting of (H,H), (H, lower alkyl); (H,α-OV_1) wherein V_1 is hydrogen or an acyl radical of an acid selected from the group consisting of a hydrocarboncarboxylic acid having up to 12 carbon atoms and retinoic acid; =CHT wherein T is a member selected from the group consisting of hydrogen, lower alkyl, fluorine and chlorine; and W together with Q is 16α,17α-lower alkylidenedioxy, 16α,17α-cycloalkylidenedioxy or 16α,17α-alkylorthoalkanoate; and

M is a member selected from the group consisting of chlorine and fluorine provided Q is other than hydroxy, and OV_2 wherein V_2 is hydrogen or an acyl radical of an acid selected from the group consisting of a hydrocarboncarboxylic acid having up to 12 carbon atoms, a hydrocarbonsulfonic acid having up to 12 carbon atoms; retinoic acid, and phosphoric acid and mono and di-alkali and alkaline earth metal salts thereof; and OV_2 together with OV is a member selected from the group consisting of alkylidenedioxy and alkylorthoalkanoate.

4,267,174
IMMUNE-STIMULATING AND CANCEROSTATIC 1-ACYL-2-CYANOAZIRIDINES

Herbert Berger, Mannheim-Kafertal; Rudi Gall, Hirschberg-Grossachsen; Wolfgang Kampe, Heddesheim; Uwe Bicker, Mannheim, and Rolf Kuhn, Mannheim-Waldhof, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim, GmbH, Mannheim, Fed. Rep. of Germany

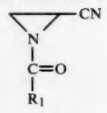
Filed Jun. 16, 1978, Ser. No. 916,389

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1977, 2731264

Int. Cl.[3] **A61K** *31/395;* **C07D** *403/06, 401/06, 405/06*

U.S. Cl. 424—244 **24 Claims**

1. A 1-acyl-2-cyanoaziridine of the formula



in which R_1 is

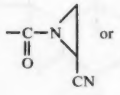
(a) a cyclic aliphatic hydrocarbon radical with 3 to 7 carbon atoms,

(b) a straight-chained or branched hydrocarbon radical with 1 to 5 carbon atoms which is mono- or di-substituted by

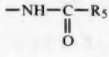
(1) a carbamoyl optionally mono- or di-substituted by a lower alkyl group,

(2) a lower alkoxy carbonyl,

(3) a lower alkoxy or a lower alkylthio substituted by a radical or the formula



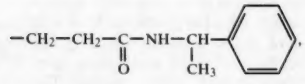
(4) an acylamino group of the formula



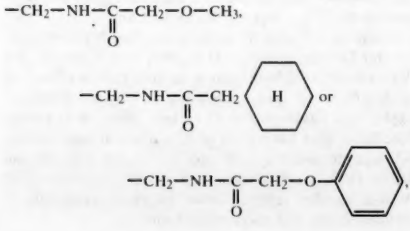
in which R_5 is hydrogen, lower alkoxy, vinyl or lower alkyl,

(c) a phenyl group which is substituted by a phenyl group,

(d)



(e)



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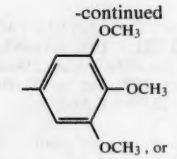
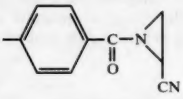
(f)



(g)



or a pharmacologically compatible salt thereof.

3. An immune-stimulating composition of matter consisting essentially of an immune-stimulating effective amount of a compound or salt according to claim **1** in combination with a pharmacologically compatible diluent.

4,267,175
BENZAMIDE DERIVATIVES

Eric A. Watts, Harlow, England, assignor to Beecham Group Limited, England

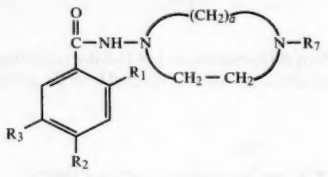
Continuation-in-part of Ser. No. 799,308, May 19, 1977, abandoned. This application Mar. 8, 1979, Ser. No. 18,625

Claims priority, application United Kingdom, Jun. 3, 1976, 22879/76; Jan. 1, 1977, 3474/77

Int. Cl.[3] **A61K** *31/495;* **C07D** *295/00*

U.S. Cl. 424—244 **37 Claims**

1. A compound of the formula:



and the pharmaceutically acceptable acid addition and quaternary salts thereof, wherein

R_1 is alkoxy of 1 to 6 carbon atoms;

R_2 is $—NH_2$ or alkanoylamino of 2 to 7 carbon atoms;

R_3 is hydrogen or halo;

R_7 is alkyl of 1 to 6 carbon atoms unsubstituted or monosubstituted with phenyl, said phenyl being unsubstituted or monosubstituted by halo, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, hydroxy, nitro, trifluoromethyl, amino, or mono- or dialkylamino wherein alkyl contains from 1 to 6 carbon atoms; and

a has a value of 2 or 3.

4,267,176
AMINO OR ACYLAMINO-SUBSTITUTED PYRIMIDINYL CEPHALOSPORANIC ACID DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS THEREOF

Takashi Kamiya, Suita; Tsutomu Teraji, Toyonaka; Yoshiharu Nakai, Otsu; Kazuo Sakane, Amagasaki, and Jiro Goto, Suita, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

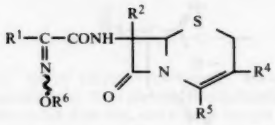
Continuation-in-part of Ser. No. 960,226, Nov. 13, 1978, abandoned. This application Apr. 24, 1979, Ser. No. 32,778

Claims priority, application United Kingdom, Nov. 14, 1977, 47352/77; Apr. 27, 1978, 16810/78; Sep. 4, 1978, 35436/78

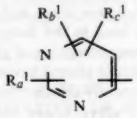
Int. Cl.[3] **A61K** *31/545;* **C07D** *501/56*

U.S. Cl. 424—246 **25 Claims**

1. A compound of the formula:



wherein R^1 is a group of the formula



in which

R_a^1 is amino or acylamino located at the 2, 4 or 6-position of the ring, acyl being selected from the group consisting of lower alkanoyl, halo (lower) alkanoyl, and lower alkoxy-carbonyl, R_b^1 and R_c^1 are each hydrogen, halogen, lower alkoxy, phenylthio, tolylthio, xylylthio, mesitylthio or naphthylthio,

R^2 is hydrogen or lower alkoxy

R^4 is substituted or unsubstituted heterocyclic-thiomethyl, the heterocyclic moiety of R^4 being a 5 to 6-membered monocyclic group or an unsaturated bicyclic condensed heterocyclic group whose rings have 5 or 6 members, the ring atoms of said heterocyclic group being C and at least one hetero atom selected from N, O and S, the heterocyclic to thiomethyl bond being a C—S bond, the substituent in said substituted heterocyclicthiomethyl group being located in the heterocyclic moiety, and being selected from lower alkyl, C_{5-6} cycloalkyl, lower alkenyl, amino(-lower) alkyl, lower alkoxy-carbonyl amino (lower) alkyl, carboxy (lower) alkyl, sulfo (lower) alkyl, phenyl, mono to tri halo substituted phenyl, and lower alkyl amino (lower) alkyl,

R^6 is hydrogen, lower alkyl, mono to tri halo (lower) alkyl, lower alkenyl, lower alkynyl, phenyl, tolyl, xylyl, cumenyl, naphthyl, phenyl (lower) alkyl, mono or di halo (lower) alkanoyl, or lower alkoxy, and R^5 is carboxy, or pharmaceutically acceptable esterified carboxy, and non-toxic pharmaceutically acceptable salts thereof.

24. A pharmaceutical antibacterial composition comprising, as an active ingredient, the compound of claim **1** in association with a non-toxic, pharmaceutically acceptable carrier or excipient.

4,267,177

β-LACTAM ANTI-BACTERIALS, COMPOSITIONS CONTAINING THEM, A PROCESS FOR THEIR PREPARATION, AND METHODS OF USE THEREOF

Andrew J. G. Baxter, Hull, England, assignor to Beecham Group Limited, England

Filed Aug. 23, 1979, Ser. No. 68,898

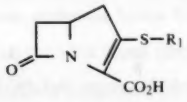
Claims priority, application United Kingdom, Aug. 25, 1978, 34643/78

Int. Cl.[3] **C07D** *521/00;* **A61K** *31/545, 31/44;* **C07D** *401/14*

U.S. Cl. 424—246 **65 Claims**

1. A compound of the formula (II):

(II)

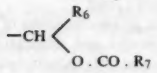


a pharmaceutically acceptable salt thereof or an ester thereof wherein the hydrogen atom of the carboxyl group is replaced by a group of the formula:

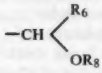
(a)

(b)

(c)



(d)



wherein:

R_2 is hydrogen or alkyl, alkenyl or alkynyl each of up to 3 carbon atoms;

R_3 is hydrogen or methyl;

R_4 is phenyl unsubstituted or substituted by fluorine, chlorine, bromine, nitro, methyl or methoxyl;

R_5 is hydrogen or phenyl unsubstituted or substituted by florine, chlorine, bromine, nitro, methyl or methoxyl;

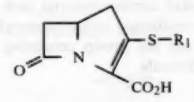
R_6 is hydrogen or methyl;

R_7 is lower alkyl or lower alkoxy of up to 3 carbon atoms, or phenyl; or R_6 is joined to R_7 to form phthalidyl; and

R_8 is lower alkyl of up to 3 carbon atoms, phenyl, chlorophenyl or nitrophenyl, each such ester being de-esterifiable by hydrogenolysis to the acid form of formula (II) and salifiable in conventional manner to pharmaceutically acceptable salt form and R_1 is pyridyl unsubstituted or substituted by one or two lower alkyl or lower alkanoyl of up to 3 carbon atoms.

65. A method of treating bacterial infections in humans and animals which comprises administering to a human or animal in need thereof, a synergistically effective amount of a compound of the formula (II):

(II)



or a pharmaceutically acceptable salt or ester thereof wherein the salt or ester is as defined in claim **1**, and R_1 is pyridyl unsubstituted or substituted by one or two lower alkyl or lower alkanoyloxy, and an antibacterialy effective amount of a penicillin or a cephalosporin.

4,267,178

DISUBSTITUTED PIPERAZINES

Gilbert Regnier, Chatenay Malabry; Michel Laubie, Vaucresson, and Jean-Claude Poignant, Bures sur Yvette, all of France, assignors to Science Union et Cie, Societe Francaise de Recherche Med., Surësnes, France

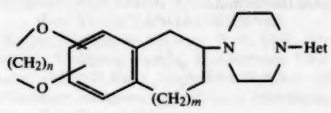
Filed Feb. 26, 1979, Ser. No. 14,876

Claims priority, application United Kingdom, Mar. 3, 1978, 8530/78

Int. Cl.[3] **A61K** *31/36, 31/335;* **C07C** *405/14*

U.S. Cl. 424—250 **8 Claims**

1. A compound selected from the group consisting of: disubstituted piperazines of the formula:



in which:

n is selected from 1 and 2;

m is selected from 0 and 1, and

Het is selected from the group consisting of pyridyl, pyrimidinyl, pyrazinyl, thiazolyl and thiadiazolyl and each of these radicals mono- and poly-substituted by alkyl having from 1 to 5 carbon atoms inclusive; and, physiologically tolerable acid addition salts thereof.

8. A method for treating a living animal body afflicted with hypertension, comprising the step of administering an amount of a compound of claim 1 which is effective for the alleviation of the said condition.

4,267,179

HETEROCYCLIC DERIVATIVES OF (4-PHENYLPIPERAZIN-1-YL-ARYLOXYMETHYL-1,3-DIOXOLAN-2-YL)METHYL-1H-IMIDAZOLES AND 1H-1,2,4-TRIAZOLES

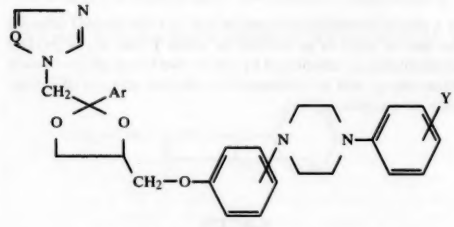
Jan Heeres, Vosselaar, and Leo J. J. Backx, Arendonk, both of Belgium, assignors to Janssen Pharmaceutica, N.V., Beerse, Belgium

Continuation-in-part of Ser. No. 919,333, Jun. 23, 1978, abandoned. This application Mar. 14, 1979, Ser. No. 20,383

Int. Cl.[3] **A61K** *31/495;* **C07D** *405/14*

U.S. Cl. 424—25 D **7 Claims**

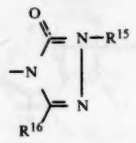
7. A composition for combatting the growth of a microorganism selected from the group consisting of fungus and bacterium comprising an inert carrier material and as an active ingredient an effective antifungal or antibacterial amount of a compound selected from the group consisting of an azole derivative having the formula



and the pharmaceutically acceptable acid addition salts and stereochemical isomeric forms thereof, wherein:

Q is a member selected from the group consisting of CH and N;

Ar is a member selected from the group consisting of phenyl, thienyl, halothienyl and substituted phenyl, said substituted phenyl having from 1 to 3 subtituents each independently selected from the group consisting of halo, lower alkyl, lower alkyloxy and trifluoromethyl; and the radical Y is a 2,3-dihydro-4H-1,2,4-triazol-4-yl radical of the formula



(f)

wherein R^{15} is selected from the group consisting of lower alkyl and aryl lower alkyl and R^{16} is selected from the group consisting of hydrogen, lower alkyl, and aryl lower alkyl;

wherein said aryl as used in the foregoing definition is selected from the group consisting of phenyl and substituted phenyl, said substituted phenyl having from 1 to 3 substituents each independently selected from the group consisting of halo, lower alkyl, lower alkyloxy and trifluoromethyl.

4,267,180

NOVEL ANTIBACTERIAL AMIDE COMPOUNDS AND PROCESS MEANS FOR PRODUCING THE SAME

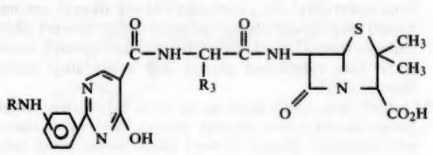
Theodore H. Haskell, Ann Arbor; Marland P. Hutt, Jr., Saline, and Ernest D. Nicolaides, Ann Arbor, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 19,984, Mar. 12, 1979, abandoned. This application Jan. 31, 1980, Ser. No. 117,318

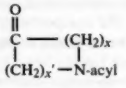
Int. Cl.[3] **A61K** *31/505;* **C07D** *499/68*

U.S. Cl. 424—251 **24 Claims**

1. A compound of the formula

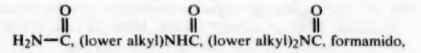


and pharmaceutically acceptable salts thereof; wherein R is

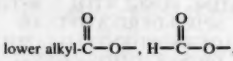


or $R_1[NR_4\text{-acyl}]_n$; x is an integer from one to five, x' is zero, one or two; R_1 is hydrogen, lower alkyl, benzyl or

wherein R_2 is hydrogen, amino or a lower alkyl group of from one to four carbon atoms, optionally substituted by from one to three chlorine or fluorine atoms; R_4 is hydrogen or lower alkyl; NH-acyl is an aminoacyl moiety derived from a carboxylic acid of from two to ten carbon atoms optionally substituted by from one to three of the following groups, hydroxyl, carboxyl,



lower alkylamido



lower alkoxy, lower alkylthio carbamido, amino, carbonyl oxygen or sulfonic acid; R_3 is phenyl, 4-hydroxyphenyl, 2-thienyl or cyclohexa-1,4-dien-1-yl and n is an integer of from one to four; when n is two to four, the acyl groups may be the same or different; when the acyl group is substituted by more than one group, the substituents may be the same or different.

23. An antibacterial pharmaceutical composition; comprising from 50 mg to 1000 mg of a compound of claim **1** and a pharmaceutical carrier.

4,267,181

HALOGENO DERIVATIVES OF ISOPROPYLAMINO PYRIMIDINE AND THERAPEUTIC USE

Andre Esanu, Paris, France, assignor to Societe d'Etudes de Produits Chimiques, Paris, France

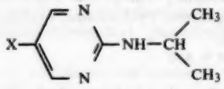
Filed Apr. 28, 1980, Ser. No. 144,761

Claims priority, application United Kingdom, May 15, 1979, 16918/79

Int. Cl.[3] **A61K** *31/505;* **C07D** *239/42*

U.S. Cl. 424—251 **2 Claims**

1. New isopropylamino pyrimidine halogeno derivatives of the formula:



in which X represents a fluorine, a chlorine or a bromine atom.

2. A therapeutic composition of mattter comprising, per dosage unit, from 1 mg to 0.1 g of a compound according to claim **1** together with an appropriate carrier.

4,267,182

NARCOTIC ANTAGONISTS IN THE THERAPY OF SHOCK

John W. Holaday, Rockville, Md., and Alan I. Faden, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 16, 1979, Ser. No. 3,699

Int. Cl.[3] **A01N** *43/42*

U.S. Cl. 424—260 **16 Claims**

1. A method of treating an animal which is suffering from a form of shock selected from the group consisting of anaphylactic, anaphylactoid, burn, cardiogenic, hypovolemic, and septic which comprises administering to said animal a therapeutically effective amount of a narcotic antagonist drug selected from the group consisting of naloxone, naltrexone, nalorphine, diprenorphine, levallorphan, pentazocine, metazocine, cyclazocine, etazocine and the pharmaceutically-acceptable acid addition salts thereof.

4,267,183

TETRAHYDROPYRIDINE DERIVATIVE

Malcolm Johnson, Wilmslow; Stuart D. Mills, Macclesfield, and Paul J. Phillips, Congleton, all of England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 26,224, Apr. 2, 1979, Pat. No. 4,225,602. This application Feb. 7, 1980, Ser. No. 119,418

Claims priority, application United Kingdom, Apr. 12, 1978, 14322/78

Int. Cl.[3] **A61K** *31/44;* **C07D** *213/04*

U.S. Cl. 424—263 **3 Claims**

1. A pharmaceutical composition for inhibiting the aggregation of blood platelets in the form of a tablet, capsule, sterile injectable solution or suspension, suppository, oily solution or suspension, syrup or elixir, which comprises an effective amount of 1-(2-chlorobenzyl)-1,2,3,6-tetrahydropyridine or a pharmaceutically acceptable acid addition salt thereof, together with a pharmaceutically acceptable diluent or carrier.

4,267,184

ANTIINFLAMMATORY 4,5-DIARYL-2-(SUBSTITUTED-THIO)PYRROLES AND THEIR CORRESPONDING SULFOXIDES AND SULFONES

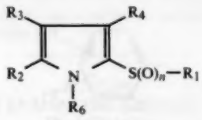
Saul C. Cherkofsky, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 10,259, Feb. 8, 1979, abandoned, which is a continuation-in-part of Ser. No. 972,201, Dec. 28, 1978, abandoned, which is a continuation-in-part of Ser. No. 886,337, Mar. 13, 1978, abandoned. This application Feb. 19, 1980, Ser. No. 122,501

Int. Cl.[3] **C07D** *207/48, 207/36, 401/04, 409/04*

U.S. Cl. 424—263 **72 Claims**

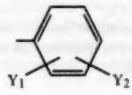
1. A compound of the formula



where

R_1=C_1–C_4 alkyl, C_1–C_4 mono- or polyfluoroalkyl or allyl;

R_2 and R_3, independently, =2-thienyl, 3-pyridyl, 3-pyridyl-N-oxide or



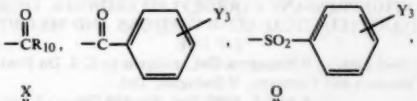
Y_1=C_1–C_4 alkyl, C_1–C_4 alkoxy, F, Cl, Br, H, $(R_5)_2N$ or $R_5S(O)_m$, wherein R_5=methyl or ethyl, and m=0, 1, or 2;

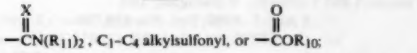
Y_2=H, F or Cl;

R_4=H or C_1–C_5 alkyl;

R_6=H, C_1–C_4 alkyl, allyl, $—CH_2CH_2N(R_7)_2$,

2-tetrahydropyranyl, 2-tetrahydrofuranyl,





R_7=H, methyl or ethyl;

R_8=H or methyl;

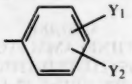
R_9=C_1–C_3 alkyl, benzyl, $—CH_2CH_2OCH_3$, or

R_{10}=C_1–C_4 alkyl or benzyl;

R_{11}=methyl or ethyl;

X=O or S;

Y_3=H, F, Cl, Br, C_1–C_4 alkyl, C_1–C_4 alkoxy or nitro; and
n=0, 1 or 2;
provided that when R_2 and R_3 both=



where Y_1 and Y_2 both=H, R_1 is CF_3; and further provided that when
R_1=CH_3, R_2=

R_3=

where one of Y_1 and Y_2=F and the other is H,
R_4=H and R_6=H,
n cannot be 2;
or its pharmaceutically suitable acid addition salt where at least one of
R_2 or R_3=3-pyridyl, Y_1=$(R_5)_2N$, or
R_6=—$CH_2CH_2N(R_7)_2$.

41. A method of treating arthritis in a mammal which comprises administering to the mammal an antiarthritic amount of a compound of claim **1**.

4,267,185

ANTIDEPRESSANT PYRROLYLPIPERIDINES, THEIR PHARMACEUTICAL COMPOSITIONS AND METHOD OF USE

Michael Finizio, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 9, 1980, Ser. No. 138,706
Int. Cl.[3] **C07D** *401/02;* **A61K** *31/455*
U.S. Cl. 424—267 **7 Claims**

1. A compound selected from the group consisting of:
(a) 1-methyl-4-(1-methylpyrrol-2-yl)-4-piperidinol,
(b) 1,2,3,6-tetrahydro-1-methyl-4-(1-methylpyrrol-2-yl)pyridine, and
(c) a pharmaceutically acceptable salt of (a) or (b).

2. A pharmaceutical composition consisting essentially of a pharmaceutically acceptable carrier and an effective antidepressant amount of a compound of claim **1**.

3. The pharmaceutical composition of claim **2** wherein the compound is 1-methyl-4-(1-methylpyrrol-2-yl)-4-piperidinol or a pharmaceutically acceptable salt thereof.

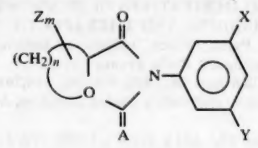
4,267,186

COMBATING FUNGI WITH SUBSTITUTED SPIRO-DERIVATIVES OF 3-(3,5-DIHALOGENOPHENYL)-OXAZOLIDINE-2,4-DIONES (THIONE-ONES)

Hans-Joachim Knops, Wuppertal; Hans-Georg Heine, Krefeld; Wilfried Draber, Wuppertal, and Wilhelm Brandes, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 19, 1979, Ser. No. 95,715
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1978, 2852924
Int. Cl.[3] **A01N** *43/76;* **C07D** *261/04*
U.S. Cl. 424—272 **10 Claims**

1. A substituted spiro-derivative of 3-(3,5-dihalogenophenyl)-oxazolidine-2,4-dione(thione-one) of the formula



in which
A is oxygen or sulphur,
X and Y each independently is halogen,
Z each independently is alkyl with 1 to 4 carbon atoms or a fused cyclopentane, cyclohexane, cyclopentene or cyclohexene ring,
m is 1, 2, 3, or 4, and
n is 2 or 3.

9. A method of combating fungi which comprises applying to the fungi, or to a habitat thereof, a fungicidally effective amount of a compound according to claim **1**.

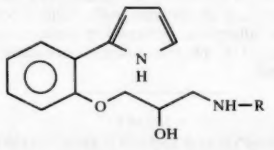
4,267,187

AMINOPROPANOL DERIVATIVES OF 2-(o-HYDROXYPHENYL)-PYRROLE

Fritz-Frieder Frickel, Ludwigshafen; Albrecht Franke, Wachenheim; Horst Koenig; Hans-Dieter Lenke, both of Ludwigshafen, and Josef Gries, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 8, 1979, Ser. No. 64,907
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1978, 2835438
Int. Cl.[3] **A61K** *31/40;* **C01D** *207/30*
U.S. Cl. 424—274 **6 Claims**

1. A compound of the formula (I)



(I)

where R is alkyl of 3 to 6 carbon atoms which is branched at the carbon in the α-position to the nitrogen or an alkyl of 3 to 6 carbon atoms which is branched at the carbon in the α-position to the nitrogen and is substituted by an alkoxy group of 1 to 3 carbon atoms, and its physiologically acceptable acid addition salts.

4. A therapeutic agent for the treatment of cardiac and circulatory disorders which comprises a therapeutically effective amount of a compound as set forth in claim **1**, or a physiologically acceptable acid addition salt thereof, together with conventional excipients and diluents.

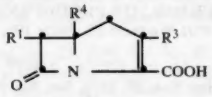
4,267,188

5-SUBSTITUTED-1-CARBA-PEN-2-EM-3-CARBOXYLIC ACID

Lovji D. Cama, Cresskill, and Burton G. Christensen, Scotch Plains, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 9, 1979, Ser. No. 65,306
Int. Cl.³ G07D *487/04;* **A61K** *31/40*
U.S. Cl. 424—274 **32 Claims**

1. A compound having the structural formula:



and a pharmaceutically acceptable salt thereof wherein:

R^1 is selected from the group consisting of hydrogen, hydroxyloweralkyl and hydroxyloweralkyl substituted by trifluoromethyl;

R^4 is selected from the group consisting of loweralkyl, phenyl and benzyl; and

R^3 is selected from the group consisting of hydrogen; loweralkyl which may be substituted by hydroxy, amino, formamidino, acetamidino, guanidino, and aminoloweralkyl; and phenyl which may be substituted by loweralkoxy, hydroxyloweralkyl, aminoloweralkyl, and the mono-, di-, and tri-loweralkyl derivatives thereof, formamidinoloweralkyl, acetamidinoloweralkyl, guanidinoloweralkyl and carboxyl.

32. An antibiotic pharmaceutical composition comprising a therapeutically effective amount of a compound according to claim **1** and a pharmaceutical carrier therefor.

4,267,189

METHOD OF USE AND COMPOSITION FOR 1,3-DIHYDRO-3-(2-HYDROXY-2-METHYLPROPYL)-2H-ISOINDOL-1-ONE

Wilbur Lippmann, St. Laurent, Canada, assignor to American Home Products Corporation

Filed Sep. 24, 1979, Ser. No. 78,548
Int. Cl.³ A61K *31/40*
U.S. Cl. 424—274 **5 Claims**

1. A method of treating ulcers in a mammal, which comprises orally or parenterally administering to said mammal an effective ulcer alleviating amount of 1,3-dihydro-3-(2-hydroxy-2-methylpropyl)-2H-isoindol-1-one.

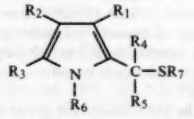
4,267,190

ANTIINFLAMMATORY 4,5-DIARYL-α,α-BIS(POLYFLUOROMETHYL)-1H-PYRROLE-2-METHANETHIOLS

Saul C. Cherkofsky, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 18, 1980, Ser. No. 141,663
Int. Cl.³ A61K *31/40;* **C07D** *207/323, 207/333, 401/04*
U.S. Cl. 424—274 **24 Claims**

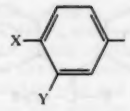
1. A compound of the formula



wherein

R_1 = H or C_1–C_2 alkyl;

R_2 and R_3 independently = 3-pyridyl or



where

X = H, F, Cl, Br, C_1–C_2 alkyl, C_1–C_2 alkoxy, di(C_1–C_2 alkyl-)amino or $CH_3S(O)_n$—where n = 0, 1 or 2; and

Y = H, F or Cl;

with the proviso that when Y is F or Cl, then X is F or Cl;

R_4 and R_5 independently = CF_3, CF_2H, CF_2Cl, or $CFCl_2$;

R_6 and R_7 independently = H, C_1–C_6 alkyl, C_1–C_6 alkanoyl, benzyl or benzyl substituted with up to two atoms selected from the group consisting of F, Cl, Br, NO_2, and CF_3; or

a pharmaceutically suitable acid addition salt where R_2 or R_3 is 3-pyridyl or dialkylaminophenyl; or

a pharmaceutically suitable metal salt where R_7 is H.

17. A method of treating arthritis in a mammal which comprises administering to the mammal an antiarthritic amount of a compound of claim **1**.

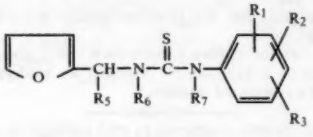
4,267,191

PROCESS FOR ENHANCING GROWTH PROMOTION IN ANIMALS

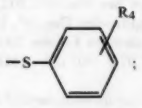
Pamela K. Baker, Hopewell; Goro Asato, Titusville, and John Dusza, Nanuet, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed May 21, 1980, Ser. No. 152,267
Int. Cl.³ A61K *31/44*
U.S. Cl. 424—285 **10 Claims**

1. A method for enhancing the growth rate of an animal and increasing the efficiency of feed utilization thereby, comprising: orally or parenterally administering to said animal an effective amount of a compound having the structure:



wherein R_1 is hydrogen, halogen, alkyl C_1–C_4, alkoxy C_1–C_4, CF_3, alkylthio C_1–C_4, nitro, cyano, C_1–C_4 alkanoyl —$COOR_4$ or



R_2 and R_3 each represent hydrogen, halogen, alkyl C_1–C_4 or alkoxy C_1–C_4; R_4 is hydrogen or alkyl C_1–C_4; R_5, R_6 and R_7 are each hydrogen or alkyl C_1–C_4.

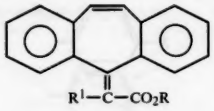
4,267,192

METHOD FOR TREATING INFLAMMATION

Milton Wolf, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Mar. 11, 1980, Ser. No. 129,296
Int. Cl.³ A61U *31/19, 31/235*
U.S. Cl. 424—308 **4 Claims**

1. A method of treating inflammation in a mammal which comprises administering thereto an effective amount of a compound having the formula:



where R is hydrogen or an alkyl group of 1–4 carbon atoms, R^1 is hydrogen or an alkyl group of 1–4 carbon atoms, and pharmaceutically acceptable salt thereof.

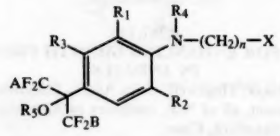
4,267,193

N-SUBSTITUTED-4-(POLYFLUORO-2-HYDROXY-2-PROPYL)ANILINES AND COMPOUNDS RELATED THERETO

Bernard R. Neustadt, and Elijah H. Gold, both of West Orange, N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed May 4, 1979, Ser. No. 35,962
Int. Cl.³ A01N *37/10*; C07C *101/72*
U.S. Cl. 424—309 **7 Claims**

1. A compound of the formula



wherein

A and B are independently hydrogen, chloro or fluoro;

R_1 is hydrogen, halo, lower alkyl or lower alkoxy;

R_2 is halo, lower alkyl or lower alkoxy;

R_3 is hydrogen or lower alkyl;

R_4 is hydrogen or lower alkyl;

R_5 is hydrogen or lower alkyl;

n is 1–3; and

X is carboxy; and the pharmaceutically acceptable salts thereof.

6. A method of treating hypertension which comprises administering to a hypertensive mammal an antihypertensive amount of a compound of claim **1**.

4,267,194

CALCIUM DERIVATIVES OF TAURINE HAVING REINFORCED NEURO-MUSCULAR ACTIVITY

Jean P. Durlach, Paris, France, assignor to Les Laboratories Meram, Paris, France

Continuation-in-part of Ser. No. 888,202, Mar. 20, 1978, Pat. No. 4,199,601. This application Dec. 14, 1979, Ser. No. 103,730
Claims priority, application France, Mar. 23, 1977, 77 08692
Int. Cl.³ C07C *143/155*; A61K *31/195*
U.S. Cl. 424—315 **6 Claims**

1. A derivative of taurine represented by the formula:

$$(CH_3—CO—NH—CH_2—CH_2—SO_3)_2^- Ca^{++}.$$

6. A method for the treatment of alcoholism comprising administering an effective amount of the compound recited in claim **1**.

4,267,195

DOG FOOD FLAVORS

James C. Boudreau, and Thomas D. White, both of Houston, Tex., assignors to University of Texas, Austin, Tex.

Continuation of Ser. No. 722,103, Sep. 10, 1976, abandoned. This application Mar. 21, 1978, Ser. No. 888,795
Int. Cl.³ A23K *1/00*
U.S. Cl. 426—2 **10 Claims**

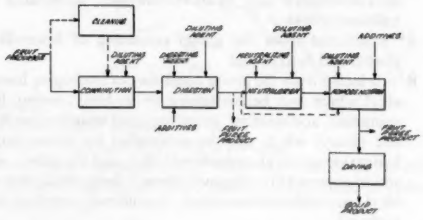
1. A process for improving the palatability of a nutritionally balanced dog food containing protein, fat, carbohydrates, vitamins and minerals, consisting essentially of incorporating into the dog food an amount of a palatability improving material selected from the group consisting of L-proline, L-cysteine, L-histidine, L-lysine, inosine 5'-triphosphate, inosine 5'-diphosphate, adenosine 5'-triphosphate or a combination of these; the amount of the palatability improving material being effective to increase the palatability of the dog food.

4,267,196

FOOD FROM NON-EDIBLE FRUIT BY-PRODUCTS AND METHOD FOR PRODUCTION

Ian F. Johnston, 4001 Westerly Pl., Suite 106, Newport Beach, Calif. 92660

Continuation of Ser. No. 830,127, Sep. 2, 1977, abandoned. This application Nov. 27, 1978, Ser. No. 963,816
Int. Cl.³ A23L *1/212*
U.S. Cl. 426—49 **37 Claims**



1. A method for preparing a palatable and edible food product for human consumption from a fruit precursor comprising substantially non-edible and substantially non-palatable portions of a fruit selected from the group consisting of citrus fruits, pineapple, banana, papaya, mango, and combinations thereof, the fruit precursor containing amylytic enzymes and cells, the method comprising the steps of:

(a) comminuting the precursor to a weight average particle size of less than about 40 mesh, the comminuted precursor having a pH of about 1.9 to about 5.2;

(b) digesting the comminuted precursor by combining an edible, water-soluble digesting agent with the comminuted precursor for adjusting the pH of the precursor to a value at which the precursor cells rupture and amylytic enzymes in the precursor are active; and

(c) neutralizing the digested precursor by changing the pH of the digested precursor with an edible, water-soluble neutralizing agent to about the value of the pH of the comminuted precursor prior to digestion.

4,267,197

ANIMAL FEED SUPPLEMENT AS A THIXOTROPIC STABLE SUSPENSION

James W. Sawhill, Canoga Park, Calif., assignor to Pacific Kenyon Corporation, Long Beach, Calif.

Continuation of Ser. No. 917,472, Jun. 21, 1978, abandoned. This application Nov. 13, 1979, Ser. No. 93,903
Int. Cl.³ A23K *1/22*
U.S. Cl. 426—69 **11 Claims**

1. a method for the preparation of a thixotropic animal feed suspension supplement which consists essentially of:

(1) incorporating, as the sole gelation agent, in an aqueous sugar solution containing at least 12 weight percent sugar, ammonium orthophospate or sulfate in sufficient quantity to form a gel;

(2) controlling the pH value of the gel to a value from about 6.5 to about 7.5;

(3) adding to said gel water-insoluble, powdered-solid animal feed nutrients comprising from 2 to about 20 weight percent of at least one member selected from the class

consisting of calcium carbonate, calcium sulfate, calcium phosphate, and mixtures thereof, having a size passing about a 100 mesh, and retained on about a 325 mesh standard screen, and

(4) adjusting the water content of the mixture to provide a viscosity thereto from 4,000 to about 10,000 cps.

4,267,198

MELT-COATED PREPARATION CONTAINING SORBIC ACID

Kazuo Sato; Akira Asahi, both of Arai, and Takahiro Koyama, Amagasaki, all of Japan, assignors to Daicel Ltd., Sakai, Japan

Filed Jun. 27, 1979, Ser. No. 52,641

Claims priority, application Japan, Jun. 27, 1978, 53-78243

Int. Cl.³ A23B *4/10, 4/12*

U.S. Cl. 426—332 **14 Claims**

1. A melt-coated solidified spherical preparation comprising sorbic acid particles bound together by and coated with a coating agent composed mainly of a solid fat, at least 80% by weight of said sorbic acid having a particle diameter greater than 80 microns and up to a maximum particle size of about 150 microns, the amount of said sorbic acid in said spherical preparation being about 0.9 to 2 times the weight of the coating agent.

4,267,199

NOODLE SOUP MIX

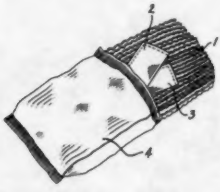
Daikichi Koshida, Toyonaka; Ko Sugisawa; Yasushi Matsumura, both of Nara, and Kazumitsu Taga, Neyagawa, all of Japan, assignors to House Food Industrial Company Limited, Osaka, Japan

Filed Aug. 6, 1979, Ser. No. 63,599

Claims priority, application Japan, Aug. 7, 1978, 53-108623[U]

Int. Cl.³ A23L *1/40, 1/16*

U.S. Cl. 426—589 **8 Claims**



1. A convenience food comprising:

(a) dehydrated noodles,

(b) a first soup adapted to maintain the pH value of the liquid obtained after boiling said noodles with said first soup at more than 7, and

(c) a second soup having an acidity sufficient to reduce the pH value of the liquid to 5.0 to 7.0 by adding said second soup to the liquid obtained from boiling the dehydrated noodles with the first soup.

4,267,200

AGGREGATED MIXED-MOISTURE FLAKED COFFEE OF HIGH AROMA

Caren A. Klien, Wyoming, and Donald R. Gieseker, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 26, 1978, Ser. No. 955,054

Int. Cl.² A23F *1/00*

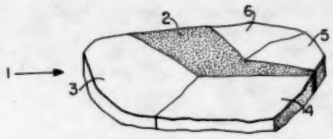
U.S. Cl. 426—595 **10 Claims**

1. A method of making an improved flaked roast coffee product characterized by increased extractability of the water-soluble flavor constituents and increased initial aroma intensity and comprising coffee flake aggregates, said method comprising the steps of:

A. Comminuting roast low-moisture coffee beans at a temperature of below 40° F., said low-moisture coffee beans having a moisture content of from about 1% to about 3.5% by weight of said low-moisture coffee beans thereby forming a low-moisture roast and ground coffee;

B. comminuting roast high-moisture coffee beans at a temperature of below 40° F., said high-moisture coffee beans having a moisture content of about 4.5% to 7% by weight of said high-moisture coffee, thereby forming a high-moisture roast and ground coffee;

C. Admixing said low-moisture roast and ground coffee and said high-moisture roast and ground coffee at a temperature of below 40° F., the mixture having an average moisture content of about 3% to 5% by weight;



D. passing the coffee mixture of step (C) through a roll mill at a feed rate of about 10 lbs./hr.-inch of nip to 400 lbs./hr.-inch of nip, said roll mill having

I. a roll pressure of from about 150 lbs./in. of nip to about 4000 lbs./in. of nip,

II. a roll temperature of from about 40° F. to about 80° F.,

III. a static gap setting of less than 0.001 inch,

IV. a roll peripheral speed of from about 470 ft./min. to 1880 ft./min., and

V. a roll diameter of from about 6 inches to 48 inches, to produce coffee flake aggregates having a flake thickness of about 0.009 inch to 0.016 inch;

and thereafter

E. screening said coffee flake aggregates to produce a flaked roast coffee product such that no more than 60% by weight of said product passes through a U.S. Standard 30 mesh screen.

4,267,201

MAGNETIC BRUSH DEVELOPMENT APPARATUS AND METHOD

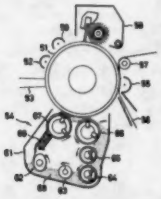
Tosio Nakahara; Hidetoshi Yano, and Nobuo Kasahara, all of Yokohama, Japan, assignors to Ricoh Company, Ltd., Japan

Filed Oct. 17, 1979, Ser. No. 85,490

Claims priority, application Japan, Oct. 20, 1978, 53-129176; Oct. 20, 1978, 53-129177

Int. Cl.³ B05D *1/04, 1/06, 5/00*

U.S. Cl. 427—27 **4 Claims**



1. In a process for attracting a powder developer containing magnetic powder onto a development roller to form a magnetic brush for contact with an electrostatic image on the surface of one of a photoconductor member and a recording member, the process being of the type including the steps of magnetically attracting the powder into contact with a moving

non-magnetic outer surface of a developer application roller having an internally disposed stationary magnet and transfering the developer from said outer surface to the development roller, the improvement which comprises the steps of terminating the rotation of said developer application roller when development is not performed and rotating said development roller irrespective of whether development is performed.

3. A magnetic brush development apparatus for attracting a powder developer containing magnetic powder and transfering the developer for contact with an electrostatic image comprising: a container for holding the developer, a developer application roller rotatably mounted in said container for transporting said developer, said developer application roller including a movable non-magnetic outer sleeve and a stationary magnet disposed within said sleeve, a development roller rotatably mounted in said container adjacent said developer application roller for receiving the developer therefrom and transporting the developer for contact with the electrostatic image, means for continuously rotating said development roller whether or not development is performed and for stopping rotation of said developer application roller when development is not performed.

4,267,202

METHOD FOR MODIFYING THE SURFACE PROPERTIES OF POLYMER SUBSTRATES

Hiroyuki Nakayama, and Tsuguo Nezu, both of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Japan

Filed May 21, 1979, Ser. No. 40,672

Claims priority, application Japan, Jun. 9, 1978, 53-69679

Int. Cl.[3] B05D *3/06*

U.S. Cl. 427—40 **8 Claims**

1. A method for modifying the surface properties of polymer substrates which comprises the steps of:

subjecting the surfaces of said polymer substrates to glow discharge treatment under the conditions of a current frequency of 1 to 10^7 kHz, a power consumption of 5 to 1000 W and a pressure of 0.01 to 10 Torr;

applying a photopolymerizable composition containing a radically polymerizable compound capable of grafting to said surfaces to said treated surfaces of polymer substrates; and

irradiating said photopolymerizable composition on said surfaces of polymer substrates with actinic rays;

thereby grafting the radically polymerizable compound contained in said photopolymerizable composition, to the surfaces of said polymer substrates.

4,267,203

MANUFACTURE OF MAGNETIC RECORDING MEDIA

Herbert Motz, Willstaett; Dieter Schaefer, Lindenberg; Werner Huebner, Frankenthal, and Dieter Mayer, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

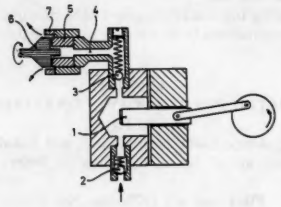
Filed Oct. 18, 1979, Ser. No. 86,135

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1978, 2846623

Int. Cl.[3] B05D *3/14*

U.S. Cl. 427—48 **3 Claims**

1. In a process for the manufacture of a magnetic recording medium by dispersing a mixture of particulate anisotropic magnetic material and additives in a solution of a polymeric binder in an organic solvent, applying a layer of the dispersion to a non-magnetizable base, orienting the anisotropic magnetic materials by means of a magnetic field and drying the coating, the improvement which comprises: subjecting the dispersion, before application to the base, to a pressure of from 98 to 784



bar and immediately thereafter releasing the dispersion under pressure through a valve onto an impact member.

4,267,204

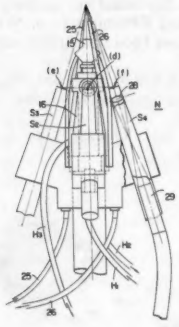
METHOD OF MANUFACTURING STRIPED PHOSPHOR SCREEN FOR BLACK MATRIX TYPE COLOR PICTURE TUBE

Yoshifumi Tomita; Masahiro Nishizawa, and Takashi Fujimura, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 9, 1978, Ser. No. 959,151

Int. Cl.[3] H01J *29/32*

U.S. Cl. 427—68 **6 Claims**



1. A method of manufacturing a striped phosphor screen for a black matrix type color picture tube, comprising the steps of:

forming a pattern of stripes of a light-absorbing material on the inner surface of a faceplate of a panel of an envelope to define transparent striped windows between the light-absorbing portions on the inner surface of said faceplate; and

applying phosphor materials of different kinds on said striped windows on which said light-absorbing material does not lie by the use of a nozzle assembly having at least one nozzle; wherein said phosphor material applying step includes,

(a) supplying said nozzle with a phosphor material,

(b) controlling the position of said nozzle with respect to said faceplate while said nozzle is in motion with respect to said faceplate, the controlling including adjusting the nozzle position in a direction perpendicular to the length of said stripes in the plane of said faceplate and in a direction perpendicular to said faceplate, so that phosphor material will be properly applied to said striped windows,

(c) causing said nozzle to sweep along a striped window while said nozzle discharges the phosphor material onto said striped windows,

(d) causing said nozzle to move from one striped window to the next while said nozzle stops the discharge of the phos-

phor material each time sai nozzle finishes a complete sweep of one striped window, and

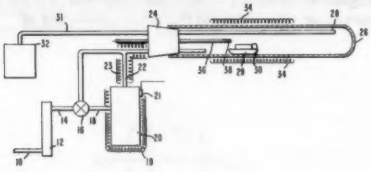
(e) repeating the above steps (b)–(d) as many times as necessary to finish the sweep of the whole effective area of said faceplate by said nozzle.

4,267,205

PROCESS FOR LOW-TEMPERATURE SURFACE LAYER OXIDATION OF A SEMICONDUCTOR SUBSTRATE

Ricardo C. Pastor, Manhattan Beach; Remedios K. Chew, Canoga Park, and Luisa E. Gorre, Gardena, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 15, 1979, Ser. No. 66,606
Int. Cl.[3] B05D *5/12;* H01L *21/316*
U.S. Cl. 427—93 4 Claims



1. A process for forming a coherent, uniform oxide layer on the surface of a silicon wafer which comprises:

(a) providing said wafer; and

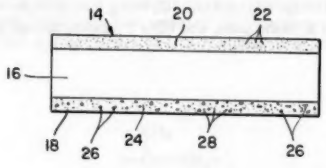
(b) heating said wafer at 750° C. in a vapor mixture of predetermined amounts of iodine and water that is conducive to the formation of atomic oxygen for a period of time sufficient to enable said oxygen to react with the surface atoms of said wafer to form said uniform, coherent oxide layer.

4,267,206

PROCESS OF MAKING HIGH-TEMPERATURE MAGNETIC TAPE

Robert A. Johnson, Graham, Tex., assignor to Graham Magnetics, Inc., North Richland Hills, Tex.

Division of Ser. No. 887,545, Mar. 17, 1978, Pat. No. 4,189,514.
This application Oct. 12, 1979, Ser. No. 84,399
Int. Cl.[3] B05D *5/12*
U.S. Cl. 427—128 2 Claims



1. A process for coating a pre-polymerized polyurethane based binder system, dispersed in a tetrahydrofuran solvent system onto a polyimide substrate comprising the step of incorporating a quantity of dimethylformamide (DMF) into said binder system before said coating is carried out, thereupon coating said binder system onto said substrate, and removing said DMF by evaporation, wherein said quantity of DMF is effective to form means to increase the adherence between said pre-polymerized polyurethane binder system and said substrate.

4,267,207

PROCESS FOR PRODUCING COBALT-CONTAINING FERROMAGNETIC IRON OXIDE POWDER

Koji Sasazawa; Tatsuji Kitamoto; Goro Akashi; Kouichi Masaki, and Shinichiro Dezawa, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 886,863, Mar. 15, 1978, abandoned.
This application May 14, 1979, Ser. No. 39,028
Claims priority, application Japan, Mar. 16, 1977, 52-29102
Int. Cl.[3] B05D *5/12*
U.S. Cl. 427—129 20 Claims

1. A process for producing a cobalt-containing ferromagnetic iron oxide powder suitable for magnetic recording which comprises

(a) mixing cobalt ion, ferrous ion and an alkali with an aqueous dispersion of acicular ferromagnetic iron oxide nuclei under non-oxidizing conditions of nitrogen gas or inert gas which completely prevent oxidation at a temperature of about 50° C. or less;

(b) heating the dispersion to a temperature of at least about 60° C. but below the boiling point of the dispersion under non-oxidizing conditions of nitrogen gas or inert gas which completely prevent oxidation to cause a reaction;

(c) treating the dispersion at a temperature of at least about 60° C. but below the boiling point of the dispersion under the following conditions:

(1) initially treating the dispersion under non-oxidizing conditions of nitrogen gas or inert gas which completely prevent oxidation for about 5 minutes or more;

(2) subsequentially treating the dispersion under oxidizing conditions for about 5 minutes or more prior to the termination of the reaction; and

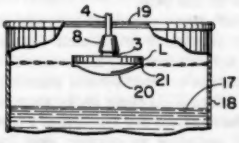
(3) a total treating time under non-oxidizing conditions and oxidizing conditions of at least about 30 minutes, said non-oxidizing conditions which completely prevent oxidation being maintained by bubbling nitrogen or an inert gas through said dispersion and said non-oxidizing conditions being maintained continuously from said mixing of said (a) through said initial treating of step (c) (1).

4,267,208

COATING OF OPTICAL LENS FOR BLOCKING PURPOSES

Jack W. Ireland, 664 Merriman Rd., Akron, Ohio 44303

Filed Jul. 30, 1979, Ser. No. 61,949
Int. Cl.[3] B65B *33/00;* B05D *5/00, 3/12;* B32B *3/02*
U.S. Cl. 427—154 8 Claims



1. The method of coating the convex side of an optical lens for blocking and for grinding and polishing the concave side which comprises dipping the convex side in solvent-containing liquid coating material in a can while the lens is held by a suction cup coaxially on the upwardly facing concave side; moving the suction cup upwardly to withdraw the convex side and adhering coating material above the level of the coating material; rotating the suction cup about its vertically disposed axis to spin the lens about its vertically disposed axis to centrifugally spread out said coating material as a continuous film covering said downwardly facing convex side and to centrifugally spin-off excess coating material from the periphery of said convex side against the inside of the can for reuse while forming a thickened bead-like peripheral portion at the periph-

ery of said convex side which, after de-blocking of the lens, facilitates peeling of the film in one piece from said convex side; and upwardly withdrawing the suction cup and lens from the can while continuing the spinning of said lens at least until the film of coating material on said convex side has dried sufficiently for handling.

4,267,209

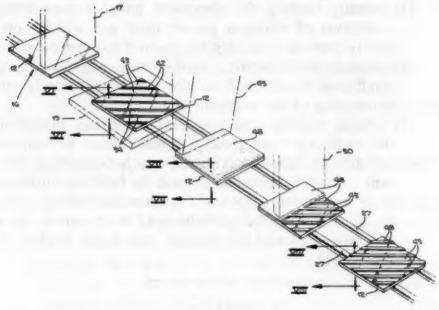
METHOD OF DECORATING A SURFACE OF A CERAMIC ARTICLE

Martin B. Hanson, Huntington Beach, Calif., assignor to Interpace Corporation, Parsippany, N.J.

Continuation of Ser. No. 794,849, May 9, 1977, abandoned. This application Jun. 5, 1979, Ser. No. 45,751

Int. Cl.³ B05D *5/02, 1/12, 1/36*

U.S. Cl. 427—199 **9 Claims**



1. In a method of decorating a ceramic surface on a ceramic body, the step of:

advancing a ceramic body having a top surface to be decorated along a path;

supplying a flowable ceramic and organic adhesive material including an organic gum, Bentonite, and a frit material adjacent to said path;

flowing said adhesive material onto said surface to be decorated to provide a preselected design defined by first surface areas covered by said material and by secod surface areas not covered by said material;

said first surface areas being sticky at ambient temperatures;

flowing discrete hard dry granules of a ceramic composition material including an organic gum over said first and second surface areas as said body moves along said path;

said granules adhering to said adhesive material in said first sticky surface areas and not adhering to said second areas;

removing said granules from said second surface areas while said body moves along said path;

and firing said ceramic body, adhesive material thereon, and granules on said adhesive material, wherein said granules, adhesive material and ceramic body interact with each other to provide a coherent design said organic gum in said granules coacting with the organic gum, Bentonite, and frit material in the adhesive material to maintain said coherent design by inhibiting crawling of the granules during firing and fusing the granules to the ceramic body and the adhesive material and to provide some granular identity after firing.

4,267,210

METHOD FOR PRODUCING CORROSION-, HEAT- AND OXIDATION-RESISTANT MATERIALS

Seishi Yajima; Kiyohito Okamura; Toetsu Shishido, and Yoshio Hasegawa, all of Oharai, Japan, assignors to The Foundation: The Research Institute for Special Inorganic Materials, Ibaragi, Japan

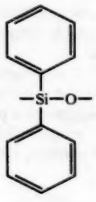
Filed Jul. 25, 1979, Ser. No. 60,563

Claims priority, application Japan, Jul. 28, 1978, 53-91432; Dec. 22, 1978, 53-157506; Dec. 23, 1978, 53-158158

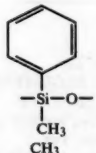
Int. Cl.³ B32B *17/10, 15/08*

U.S. Cl. 427—226 **10 Claims**

1. A method for producing a corrosion-, heat and oxidation-resistant material which comprises coating a substrate composed of at least one material selected from metals, carbonaceous substances and ceramics with a semi-inorganic compound, and heat-treating the coated substrate at a temperature of 300° to 2000° C. said semi-inorganic compound being a modified organoborosiloxane compound obtained by reacting an organoborosiloxane compound composed of (1) at least one siloxane unit selected from the group consisting of



(A),



(B), and

(C)

the content of the siloxane unit (C) being 0 to 30 mole% based on the total siloxane units, and (2) a boroxane unit of the formula

(D)

with at least one organic compound selected from the group consisting of polyhydric aliphatic alcohols, aromatic alcohols, phenols and aromatic carboxylic acids at a temperature of from 250° to 450° in an atmosphere inert to the reaction.

4,267,211

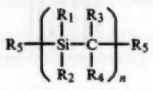
PROCESS FOR PRODUCING CORROSION-, HEAT- AND OXIDATION-RESISTANT SHAPED ARTICLE

Seishi Yajima; Kiyohito Okamura; Toetsu Shishido, and Yoshio Hasegawa, all of Oharai, Japan, assignors to The Foundation: The Research Institute for Special Inorganic Materials, Kashima, Japan

Filed Nov. 8, 1979, Ser. No. 92,405
Claims priority, application Japan, Nov. 13, 1978, 53-138937; Dec. 22, 1978, 53-157506; Dec. 23, 1978, 53-158158
Int. Cl.[3] B05D 3/02
U.S. Cl. 427—228 5 Claims

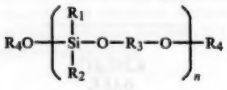
1. A process for producing a corrosion-, heat- and oxidation-resistant shaped article which comprises coating a shaped article composed of at least one material selected from metals, carbonaceous substances and ceramics with a coating composition comprising a semi-inorganic compound, and heat-treating the coated article at 400° to 2,000° C. in a non-oxidizing atmosphere, said semi-inorganic compound being at least one polymer selected from the group consisting of

(1) polycarbosilanes of the following formula

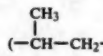


wherein R_1, R_2, R_3, R_4 and R_5, independently from each other, represent a hydrogen atom, an alkyl group having not more than 4 carbon atoms, a haloalkyl group having not more than 4 carbon atoms, a phenyl group, a cycloalkyl group having 5 to 8 carbon atoms, a benzyl group or a vinyl group, and n is from 5 to 200, and

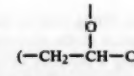
(2) polycarbosiloxanes of the formula



wherein R_1, R_2 and R_4, independently from each other, represent an alkyl group having not more than 4 carbon atoms, a haloalkyl group having not more than 4 carbon atoms, a phenyl group, a cycloalkyl group having 5 to 8 carbon atoms, a benzyl group or a vinyl group; R_3 represents a linear alkylene group of the formula $-(CH_2)_n-$ in which n is an integer of 1 to 6, a propylene group



or a glycerol group



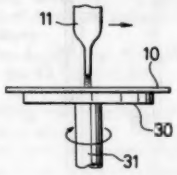
and n is from 2 to 200.

4,267,212

SPIN COATING PROCESS

Shinichi Sakawaki, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Sep. 19, 1979, Ser. No. 77,070
Claims priority, application Japan, Sep. 20, 1978, 53-115368
Int. Cl.[3] B05D 5/10, 1/40
U.S. Cl. 427—240 16 Claims



1. A spin coating method in which after a coating solution is supplied onto a horizontal substrate, said substrate is rotated about a rotary axis perpendicular to said substrate, and a coated film is formed to a desired thickness on said substrate by controlling the speed of rotation of said substrate, the improvement comprising; while said substrate is being rotated at a low speed of 50 to 150 rpm., moving a coating solution supplying nozzle radially of said rotating substrate to supply said coating solution onto said substrate to substantially uniformly coat said substrate with said coating solution and thereafter, said substrate is subsequently rotated to produce a desired thickness of said coating solution upon said substrate.

4,267,213

SULFONATO-ORGANOSILANOL COMPOUNDS AND AQUEOUS SOLUTIONS THEREOF

Boyd R. Beck, Spring City; Frank T. Sher, and George V. D. Tiers, both of St. Paul ,all of Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 895,528, Apr. 11, 1978. This application Oct. 10, 1979, Ser. No. 83,465
Int. Cl.[3] C07F 7/02
U.S. Cl. 427—292 4 Claims

1. A process for imparting hydrophilicity to a substrate having a siliceous surface said process comprising the steps of:

(a) contacting said surface with an aqueous solution comprising a sulfonato-organosilanol compound having at least one sulfonato-organic substituent, wherein the weight percentage of oxygen in said compound is at least about 30%, and the weight percentage of silicon in said compound is not greater than about 15%, said percentages being taken with reference to the water-free acid form of said compound, and

(b) drying said solution on said surface.

4,267,214

METHOD AND APPARATUS FOR BROMINATING TACKY SURFACES OF A PHOTOPOLYMER ARTICLE

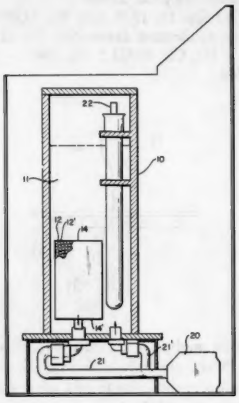
Leigh Jezorek, Somerville; Irving Pitel, Edison, and Richard Silverman, Clark, all of N.J., assignors to Kelleigh Corporation, Avenel, N.J.

Filed Sep. 18, 1979, Ser. No. 76,787
Int. Cl.[3] B05D 3/10
U.S. Cl. 427—341 7 Claims

7. A method for treating the tacky portions of the surface of a photopolymer article comprising:

(a) immersing said photopolymer article in a zone containing

an aqueous solution of bromine and an ion-exchange resin to which elemental bromine has been added; and



(b) circulating said solution across said tacky photopolymer article surface and through said ion-exchange resin.

4,267,215

PROCESS FOR COATING A WEB USING REVERSE APPLICATOR ROLL

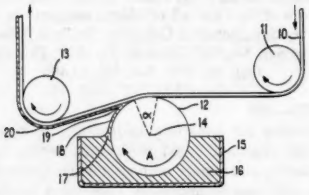
Aubrey F. Riggs, Knebworth, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Jun. 5, 1978, Ser. No. 913,004

Claims priority, application United Kingdom, Jun. 23, 1977, 26307/77

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—372.2 **12 Claims**



1. A method of coating a surface of a web, consisting essentially of forwarding the web in contact with the surface of an applicator roll, supplying a flowable coating medium to the surface of the applicator roll in the absence of mechanical metering means cooperating with said applicator roll, and rotating the applicator roll in a direction contrary to the direction of forward movement of the web to transfer the coating medium from said applicator roll surface to said web surface wherein the dynamic viscosity of the coating medium and the peripheral velocity of the applicator roll are each selected in accordance with the relationship

$$h = k\eta^{0.5}U^{0.5}$$

such that a layer of coating medium of equilibrium thickness not exceeding 5.0 mm is entrained on the surface of the applicator roll for transfer to the surface of the web, and the ratio of the peripheral velocity of the applicator roll to the forward speed of the web is maintained at a value not exceed 0.4:1, wherein

h is the equilibrium thickness (mm) of the entrained coating medium on the applicator roll surface,

k has a value of from 0.01 to 100,

η is the dynamic viscosity (Nsm^{-2}) of the coating medium, and

U is the peripheral velocity (ms^{-1}) of the applicator roll.

4,267,216

METHOD FOR PROTECTING POWER CONNECTED MACHINE PART PAIRS FROM FRICTION CORROSION

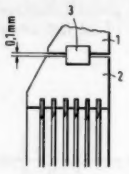
Klaus Boddenberg; Jürgen Waldmann, and Manfred Demmer, all of Duisberg, Fed. Rep. of Germany, assignors to Mannesmann Demag AG, Duisburg, Fed. Rep. of Germany

Filed Aug. 9, 1979, Ser. No. 65,375

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1978, 2836334

Int. Cl.³ B32B *15/20*; C23F *15/00*; F16B *1/06*

U.S. Cl. 427—397.8 **8 Claims**



1. A method for protecting connected-together, paired bronze machine parts, which operate in the presence of oxygen and are subject to oscillatory load, from friction corrosion, comprising the steps of

(a) maintaining a separation distance between the mating surfaces of said machine parts of at least about 0.05 mm.; and

(b) carrying out said maintaining step by placing a single separating material between said machine parts, said separating material having a hard consistency and being selected from materials having a greater relative hardness than said machine parts.

4,267,217

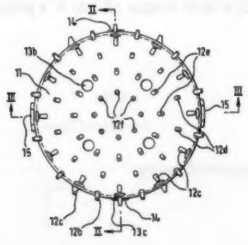
BALL

Bernard F. Brooker, Silver Birches Balcombe Rd., Crawley, Sussex, England

Division of Ser. No. 973,596, Dec. 27, 1978, Pat. No. 4,203,941. This application Sep. 19, 1979, Ser. No. 77,153

Int. Cl.³ A63B *37/02*; A47G *33/04*

U.S. Cl. 428—11 **3 Claims**

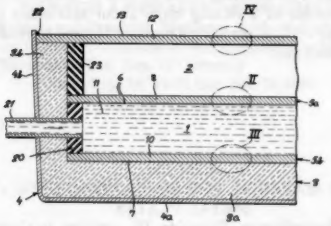


1. A supporting shell for fitting over a spherical core comprising a pair of half-spherical shells clipped or adapted to be clipped together, and having a plurality of spaced projections extending substantially radially therefrom with the tips located on an imaginary sphere concentric with the core.

4,267,218
SOLAR COLLECTOR WITH BLACKENED LAYER FACING INSULATION

Robert Brügger, Neuss, Fed. Rep. of Germany, assignor to Langbein-Pfanhauser Werke AG, Neuss, Fed. Rep. of Germany

Filed Apr. 11, 1979, Ser. No. 29,075
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1978, 2815746
Int. Cl.³ F24J *3/02*
U.S. Cl. 428—35 **4 Claims**

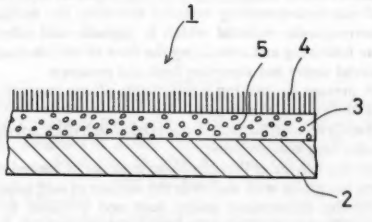


1. A solar energy collector comprising:
a housing;
a heat exchange cell formed in said housing and traversible by a heat exchange medium to carry away collected thermal energy;
a heat-insulating chamber in said housing adjoining said cell along side thereof turned toward solar energy incident upon the collector; and
a body of insulating material in said housing along the side of said cell, said cell having a first wall separating it from said chamber and a second wall separating it from said body, each of said walls being constituted of an aluminum sheet, the sheet of said first wall being provided with black metal-containing aluminum oxide layers on both of its sides to form energy transmitter layers and the sheet of said second wall being formed with a black metal-containing aluminum oxide layer on its side turned toward said body of insulation and constituting an energy absorber layer, each of said black aluminum oxide layers containing a metal other than aluminum and selected from the group which consists of tin or silver.

4,267,219
FLOCKED LAMINATES HAVING ADHESIVE CONTAINING HOT-MELT POLYMER PARTICLES

Hideo Ueno, Kawachinagano, and Juiti Miyosi, Sakai, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Sep. 17, 1979, Ser. No. 76,082
Claims priority, application Japan, Oct. 2, 1978, 53-122165
Int. Cl.³ B32B *33/00*
U.S. Cl. 428—90 **11 Claims**



1. A flocked laminate comprising a synthetic resin base layer having hotmelt adhering properties, an adhesive layer applied to said base layer, said adhesive layer prepared from a polymer emulsion and admixed with a finely divided synthetic resin compatible or identical with said base layer synthetic resin, in an amount of about 0.1 to about 50 parts by weight per 100 parts by weight of the solids of the polymer emulsion; and a flock layer formed on the adhesive layer.

4,267,220
DUST-CONTROLLING MAT HAVING GOOD FLAME-PROOFNESS

Akira Yagi, Takatsuki; Ichiro Miyoshi, Kobe, and Nobusue Nogami, Kyoto, all of Japan, assignors to Duskin Franchise Co., Ltd., Osaka, Japan

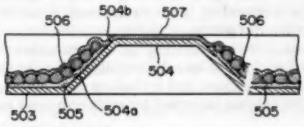
Filed Jan. 8, 1980, Ser. No. 110,531
Int. Cl.³ B32B *3/02*
U.S. Cl. 428—96 **10 Claims**

10. A dust-controlling mat comprising a base fabric, pile yarns formed by tufting spun yarns to said base fabric and a packing of a synthetic rubber or synthetic resin for fixing the pile yarns to the base fabric, wherein said pile yarns are spun yarns containing at least 10% by weight of staples of mix-spun fibers comprising 30 to 70% by weight of polyvinyl alcohol and 70 to 30% by weight of polyvinyl chloride, said mix-spun fibers have a micro-structure in which polyvinyl chloride is present in the form of fibrils in a matrix of polyvinyl alcohol, a dust adsorbing agent is adsorbed and retained in said pile yarns in an amount of 1 to 40% by weight based on said pile yarns, and dust adsorbing agent is a lubricating oil of the synthetic oil or mineral oil type or an organic phosphoric acid ester.

4,267,221
ARCHITECTURAL PANEL AND METHOD OF MAKING THE SAME

Takashi Ishikawa, No. 1355, Ooaza Higashine Ko, Higashine-shi, Yamagata-ken, Japan

Continuation of Ser. No. 931,498, Aug. 7, 1978, abandoned. This application Apr. 9, 1980, Ser. No. 138,816
Claims priority, application Japan, Aug. 23, 1977, 52-102031; Sep. 24, 1977, 52-114931; Apr. 22, 1978, 53-53759[U]; May 11, 1978, 53-63065[U]
Int. Cl.³ B32B *3/30, 5/16, 27/14*
U.S. Cl. 428—121 **9 Claims**



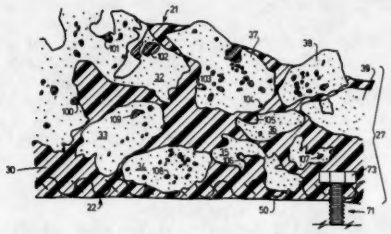
1. An architectural panel, comprising:
a one-piece base sheet having a substantially uniform wall thickness and which is embossed to form a multitude of protruding surface area portions having substantially flat upper walls which lie within a first common plane, the remainder of said sheet consisting essentially of a multitude of depressed surface area portions located between said protruding surface area portions, said depressed surface area portions having substantially flat upper faces which lie within a second common plane which is substantially parallel with said first common plane, said second common plane being offset vertically downwardly from said first common plane a distance in the range of from 0.3 to 5 mm, said protruding surface area portions being joined to said depressed surface area portions by downwardly inclined side walls which extend at an angle of from about 30° to 70° with respect to said first common plane; adhesive base coat layers made of synthetic resin and adhered to and covering the upper faces of said depressed surface area portions and said side walls; layers of particulate solids having a particle size in the range of 28 to 32 mesh respectively adhered to said adhesive base coat

layers and substantially covering same; the upper walls of said protruding surface area portions being free of adhesive base coat layers and layers of particulate solids; and an overcoat synthetic resin layer covering the entirety of said layers of particulate solids and the upper walls of said protruding surface area portions.

4,267,222
COMPOSITE PANEL AND PROCESS OF ITS MANUFACTURE

Eugene D. Sanders, 624 Birge, Dumas, Tex. 79029

Continuation of Ser. No. 714,856, Aug. 16, 1976, abandoned. This application Jun. 14, 1978, Ser. No. 915,545
Int. Cl.[3] B32B *5/16*
U.S. Cl. 428—150 **10 Claims**

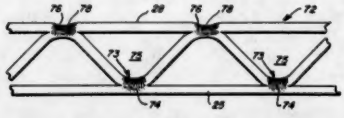


1. A building panel comprising essentially, when completed, a main body mass consisting of a substantially rigid polyester resin in sheet form having molded therein a plurality of closely compacted porous scoria rock particles of varied size in range of ¼ to 1¼ inch diameter size and each comprising vesicules of varied size in range of 0.1 to 0.5 millimeters diameter that occupy the major portion of the volume of each such particle, such particles being compacted to form a substantially imcompressible mass, said polyester resin being of substantial tensile strength and extending between the rock particles and including fingerlike intrusions extending into the larger vesicules of the rock particles and holding the rock particles together, said compacted rock particles substantially filling the entire volume of the main body mass, and including rock portions extending beyond the volume occupied by such polyester resin mass.

4,267,223
CORRUGATED PLASTICBOARD

Henry D. Swartz, Chestnut Hill, Mass., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 921,501, Jul. 3, 1978, Pat. No. 4,188,253, which is a division of Ser. No. 754,504, Dec. 27, 1976, Pat. No. 4,132,581. This application May 9, 1979, Ser. No. 37,472
Int. Cl.[3] B32B *3/30*
U.S. Cl. 428—172 **5 Claims**



1. A corrugated plasticboard having a core of corrugations which give rise to apexes, capable of being cleanly folded either parallel or transverse to said corrugations without a pressure assist bar, comprising: two face sheets separated and heat bonded to a corrugated core, wherein, on a first side of said corrugated core, a first of said two face sheets is heat bonded substantially along the complete width of apexes of said corrugated core, and wherein, on a second side of said corrugated core, a second of said two face sheets has separate heat bonds transverse to and spaced apart along substantially each apex of said corrugated core, wherein some of said heat bonds form colinear indentations transverse to a plurality of said corrugations which indentations are at such a depth that a smooth fold incorporating some of said indentations can be made by means of a flexing force about said some of said indentations without applying a pressure thereto by means of a pressure assist bar.

4,267,224
PLASTIC MATERIAL FOR SIMULATING ENGRAVED METAL PLATES

James C. Kanzelberger, Riverside, Ill., assignor to Contemporary, Inc., River Forest, Ill.

Continuation-in-part of Ser. No. 801,863, May 31, 1977, which is a division of Ser. No. 770,797, Feb. 22, 1977, Pat. No. 4,125,655, which is a continuation-in-part of Ser. No. 579,419, May 21, 1975, abandoned, which is a continuation-in-part of Ser. No. 454,166, Mar. 25, 1974, Pat. No. 3,940,864. This application Jul. 18, 1979, Ser. No. 58,568
Int. Cl.[3] B32B *7/02, 27/06;* B44C *1/24*
U.S. Cl. 428—216 **13 Claims**

1. A plastic material comprising a laminated structure forming a plate having a metal-like appearance, said structure having a substrate layer of material which does not distort under hot stamping pressures and temperatures, a second layer of thermoplastic material having a predetermined thickness superimposed over said substrate, said thermoplastic material flowing under the heat and pressure of a hot stamping die, whereby the depth of the hot stamping debossment is limited to the predetermined thickness of said thermoplastic layer, and a film of non-heat-spreading material covering the surface of said thermoplastic material which is opposite said substrate, said film following and containing the flow of said thermoplastic material under hot stamping heat and pressure.

11. A process for making a debossable plastic material, said process comprising the steps of:

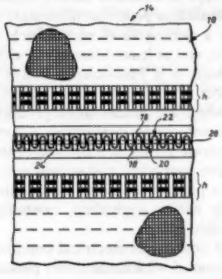
a. forming a substrate from a material which does not deboss under heat and pressure;
b. forming a layer of thermoplastic material of limited thickness integrally with and over the surface of said substrate, whereby debossment under heat and pressure is only possible in said layer of limited thickness; and
c. forming integrally with and over the surface of said thermoplastic material a heat-resisting film which does not spread said heat, said film having a thickness which follows and confines said debossment.

4,267,225
Patent Not Issued For This Number

4,267,226
FABRIC WEB AND A METHOD OF MAKING A FABRIC WEB FOR A DEWATERING MACHINE

Ernst Kohler, and Friedrich Moninger, both of Eislingen, Fed. Rep. of Germany, assignors to Wurttembergische Filztuchfabrik, Goppingen, Fed. Rep. of Germany

Filed Sep. 19, 1979, Ser. No. 76,688
Int. Cl.³ D21F *1/10*
U.S. Cl. 428—223 **22 Claims**



1. A fabric web for a drying section of a paper, paperboard and cellulose dewatering machine, said web comprising at least two fabric layers formed of longitudinal and transverse filaments, one of said layers having a plurality of longitudinal filaments of greater cross-section than the remainder of said longitudinal filaments at at least one end thereof, said one layer containing said longitudinal filaments of greater cross-section being folded back at said end, said folded back end of said layer and said longitudinal filaments of greater cross-section contained therein being secured to the other of said layers, said folded back and secured longitudinal filaments of greater cross-section forming a plurality of spaced apart curved connecting members at said end.

4,267,227
PRESS FABRIC RESISTANT TO WAD BURNING

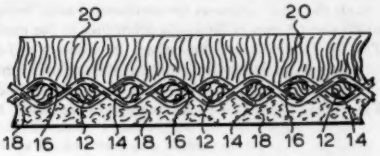
Stanley C. Schiher, Troy, and Armen Renjilian, Colonie, both of N.Y., assignors to Albany International Corp., Albany, N.Y.

Filed Jan. 11, 1980, Ser. No. 111,367
Int. Cl.³ B32B *5/02*
U.S. Cl. 428—234 **4 Claims**

1. A wad burning resistant wet press fabric, which comprises:

a base layer of a textile;

a surface layer for receiving a wet paper sheet, affixed to the base layer by needling, said surface layer comprising non-woven textile fibers of a high-temperature resistant, synthetic, polymeric resin; and

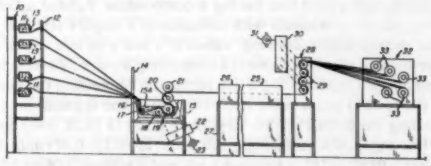


a coating of a high-temperature resistant, synthetic, water-insoluble, polyamide-imide polymeric resin on the surface exposed portions of said fibers.

4,267,228
METHOD FOR PRODUCING TEAR TAPE AND SEAL AND TEAR LINE FOR PACKAGING

Arnold F. Stone, Franklin, and William D. Kinnard, Spring Hill, both of Tenn., assignors to CPS Industries, Franklin, Tenn.

Continuation-in-part of Ser. No. 13,577, Feb. 21, 1979. This application Sep. 6, 1979, Ser. No. 72,961
Int. Cl.³ B32B *3/00, 5/06;* D02G *3/00;* C09J *7/00*
U.S. Cl. 428—297 **16 Claims**



1. A hot-melt adhesive line comprised of at least one bundle of fibrous strands and a hot-melt adhesive in sufficient quantity to effect interfibrous adhesion throughout the fibrous strands, the fibrous strands of said bundle having a denier of between 500 and 2200, said line having a preselected shape defined by an extruded outer layer of compacted hot-melt adhesive enclosing the bundle of fibrous strands, said line being adapted to adhere to a surface under an applied force causing lateral spreading and a reduction in thickness of both the hot-melt adhesive and bundle of fibrous strands from said preselected shape after reheating of the hot-melt adhesive and under application of said applied force.

4,267,229
DECORATIVE ACRYLIC SHEETS AND ARTICLES FORMED THEREFROM

Peter A. Knight, Darwen, and Janet P. Tilley, Welwyn, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Oct. 30, 1978, Ser. No. 955,602
Claims priority, application United Kingdom, Nov. 14, 1977, 47283/77
Int. Cl.³ B32B *27/00*
U.S. Cl. 428—324 **14 Claims**

1. A coloured acrylic sheet having dispersed therein a mixture of pigments or a pigment and a dye, characterised in that said mixture comprises an inorganic pigment which is distributed non-uniformly throughout the sheet and concentrated preferentially towards one surface of the sheet and a colourant selected from an organic pigment, organic dye or a non-sedimenting inorganic pigment distributed substantially uniformly throughout the sheet, the concentration of non-uniformly distributed inorganic pigment being sufficient to give a total luminous transmittance of 0–50%, if the uniformly distributed colourant were absent from the sheet, and the concentration of

the uniformly distributed colourant being sufficient to give a total luminous transmittance of between 0 and 90%, if the non-uniformly distributed inorganic pigment were absent from the sheet, the total luminous transmittance values being measured on sheet 5 mm in thickness according to the method of ASTM D1003-59T using Procedure B, wherein a 3-dimensional depth of colour is visible through the surface of the sheet that is opposite the surface where the non-uniformly distributed inorganic pigment is preferentially concentrated.

4,267,230

FILM FOR A MAGNETIC BUBBLE DOMAIN DEVICE

Norio Ohta; Fumihiko Ishida, both of Hachioji; Tadashi Ikeda, Kodaira; Keikichi Ando, Musashino, and Yutaka Sugita, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 30, 1979, Ser. No. 89,380

Claims priority, application Japan, Nov. 1, 1978, 53/133713

Int. Cl.³ G11B *5/64*

U.S. Cl. 428—336 **3 Claims**

1. A garnet film on a substrate, for a magnetic bubble domain device, said garnet film having a composition $Y_aSm_bLu_cGd_x$-$Fe_{5-y}Ga_yO_{12}$, wherein with reference to a single FIGURE in the accompanying drawing, values of x and y lie in a region A surrounded by a line segment a connecting a point 5 (0.90, 0.16) and a point 7 (0.65, 0.85), a line segment b connecting the point 7 (0.65, 0.85) and a point 25 (0.09, 1.14), a line segment c connecting the point 25 (0.09, 1.14) and a point 15 (0.25, 0.48), and a line segment d connecting the point 15 (0.25, 0.48) and the point 5 (0.90, 0.16), a+b+c+x=3, and a is from 0.04 to 1.59, b is from 0.30 to 1.00, and c is from 0.70 to 1.55, said substrate being a $Gd_3Ga_5O_{12}$ single crystalline substrate, and said garnet film being an epitaxially grown film.

4,267,231

POLYESTER IMIDE WIRE ENAMELS

Otto S. Zamek, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,247

Int. Cl.³ B32B *15/08;* **C08G** *73/16*

U.S. Cl. 428—379 **6 Claims**

1. An electrical wire enamel comprising

(a) a polyester imide obtained by heating ingredients consisting essentially of

(i) an aromatic diamine:

(ii) an aromatic carboxylic anhydride containing at least one additional carboxylic group;

(iii) terephthalic acid or a reactive derivative thereof;

(iv) a polyhydric alcohol having at least three hydroxyl groups;

(v) an alkylene glycol; and

(vi) the secondary alcohol compound, 1-butoxyethoxy-2-propanol, until reaction therebetween is substantially complete; and

(b) a solvent therefor comprising predominantly

(i) an alkylene glycol monoether or monoester,

(ii) a polyalkylene glycol monoether or monoester or

(iii) a mixture of (i) and (ii).

5. An electrical conductor provided with a continuous coating of the polyester-polyimide wire enamel of claim 1.

4,267,232

CONDUCTORS HAVING INSULATION OF POLYESTER IMIDE RESIN

Karl Schmidt; Ferdinand Hansch; Hans-Malte Rombrecht, and Hans-Joachim Beck, all of Hamburg, Fed. Rep. of Germany, assignors to Dr. Beck & Co. Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Division of Ser. No. 677,207, Apr. 15, 1976, Pat. No. 4,170,684, which is a continuation of Ser. No. 293,878, Oct. 2, 1972, abandoned, which is a division of Ser. No. 659,234, Aug. 8, 1967, Pat. No. 3,697,471, which is a continuation of Ser. No. 238,315, Nov. 2, 1962, abandoned. This application Oct. 9, 1979, Ser. No. 82,507

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1961, 64660; Dec. 12, 1961, 65140; Jul. 6, 1962, 67935

The portion of the term of this patent subsequent to Oct. 9, 1996, has been disclaimed.

Int. Cl.³ H01B *3/42, 19/04*

U.S. Cl. 428—379 **42 Claims**

1. An insulated electrical conductor comprising in combination, an electrical conductor and a cured polyester imide resin coating said electrical conductor, said polyester imide resin having ester groups of acid and alcohol moieties in the chain which are condensation products of at least difunctional carboxylic acid or a derivative thereof which is a functionally active equivalent, and at least difunctional alcohol or a derivative thereof which is a functionally active equivalent, and between said ester groups, moieties containing a 5-membered imide ring and which are condensation products of an aromatic carboxylic acid anhydride containing a 5-membered cyclic carboxylic anhydride group or a derivative thereof which is a functionally active equivalent and at least one additional reactable group, and a primary amine or a derivative thereof which is a functionally active equivalent, containing at least one additional reactable group.

21. Method of coating an electrical conductor with electrically insulating enamel which comprises passing the conductor through an enameling lacquer comprising a resin for forming the enamel and a cresol type solvent, to coat the conductor with a film of the enameling lacquer, and thereafter heating the coated conductor to cure the resin and drive off the solvent, said resin being a polyester imide resin having ester groups of acid and alcohol moieties in the chain which are condensation products of at least difunctional carboxylic acid or a derivative thereof which is a functionally active equivalent, and at least difunctional alcohol or a derivative thereof which is a functionally active equivalent, and, between said ester groups, an amount effective to improve the thermal stability of the resin without rendering the resin insoluble to the extent which would make it unsuitable for use in a wire lacquer composed of the resin dissolved in cresol and solvent naphtha, of moieties containing a 5 membered imide ring and which are condensation products of an aromatic carboxylic acid anhydride containing a 5-membered cyclic carboxylic acid anhydride group or a derivative thereof which is a functionally active equivalent and at least one additional reactable group, and a primary amine or a derivative thereof which is a functionally active equivalent, containing at least one additional reactable group.

4,267,233

ELECTRICALLY CONDUCTIVE FIBER AND METHOD FOR PRODUCING THE SAME

Hiroaki Tanaka, and Kiyokazu Tsunawaki, both of Matsuyama, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Feb. 6, 1980, Ser. No. 119,019

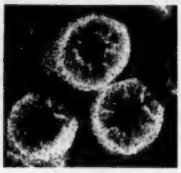
Claims priority, application Japan, Feb. 14, 1979, 54-15035; May 1, 1979, 54-52465; May 8, 1979, 54-55229

Int. Cl.³ B32B *9/00*

U.S. Cl. 428—389 **12 Claims**

1. An electrically conductive fiber comprising an organic polymeric fiber matrix and copper (I) iodide which is located in the inside of at least the peripheral surface layer of said organic polymeric fiber matrix and which is in an amount

sufficient to cause the electric resistivity of the conductive fiber under a D.C. voltage of 1 K.V. at a temperature of 20° C.



and at a relative humidity of 65% to be 1×10^{12} ohm/cm or less.

4,267,234

POLYGLUTARALDEHYDE SYNTHESIS AND PROTEIN BONDING SUBSTRATES

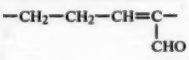
Alan Rembaum, Altadena, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Continuation-in-part of Ser. No. 887,825, Mar. 17, 1978, abandoned. This application Mar. 19, 1979, Ser. No. 21,989

Int. Cl.³ B32B *5/16*

U.S. Cl. 428—403 **16 Claims**

1. Microspheres having a diameter from 200 Å to 10μ consisting essentially of polylutaraldehyde having a repeating conjugated aldehyde containing structural unit of the formula:



$$-CH_2-CH_2-CH=\underset{\displaystyle CHO}{\overset{\displaystyle |}{C}}-$$

4,267,235

POLYGLUTARALDEHYDE MICROSPHERES

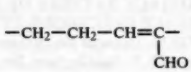
Alan Rembaum, Altadena, and Shlomo Margel, N. Hollywood, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Mar. 19, 1979, Ser. No. 21,988

Int. Cl.³ B32B *5/16*

U.S. Cl. 428—407 **15 Claims**

1. Microspheres having a diameter from 200 A to 10μ consisting essentially of water-insoluable copolymer of glutaraldehyde having a repeating conjugated aldehyde containing unit of the formula:



$$-CH_2-CH_2-CH=\underset{\displaystyle CHO}{\overset{\displaystyle |}{C}}-$$

cross linked with 0.1 to 10% by weight of a water-dispersible or water-soluble organic cross-linking agent containing at least two functional groups reactive with said aldehyde group selected from amine, hydroxyl, imine mercaptan or amide and said microspheres containing 0.5 to 40% by weight of metal containing particles having an atomic number above 50 and a diameter below 1000 A.

4,267,236

ALLOYS OF EPOXY AND HOMOPOLYMERS OF FURFURYL ALCOHOL

Ignatius Metil, 364 Whitfield Ave., Buffalo, N.Y. 14220

Filed Aug. 9, 1979, Ser. No. 65,086

Int. Cl.³ B05D *3/02;* **B32B** *15/08, 27/38*

U.S. Cl. 428—413 **8 Claims**

1. An article comprising a structure having thereon a temperature- and corrosion-resistant cured coating which adheres to various substrates including metals and concrete, which coating consists essentially of an intimate mixture of homopolymer of furfuryl alcohol and epoxy resin cured with an agent selected from the group consisting of polyfunctional amines and amides, said homopolymer being present in weight ratio with respect to the epoxy resin in the range 10/90 to 90/10, to provide the cross-linking necessary to make the cured coating self-supporting.

4,267,237

MOLDED PREFORMED POLYTETRAFLUOROETHYLENE STRUCTURES

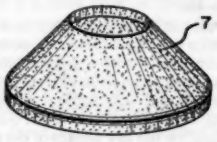
Gilbert Duperray, Lozanne; Andre A. Monnet, Lyons, and Claude Tournut, Francheville, all of France, assignors to Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Continuation of Ser. No. 882,881, Mar. 1, 1978, abandoned, which is a division of Ser. No. 671,042, Mar. 29, 1976, Pat. No. 4,102,966. This application Apr. 17, 1979, Ser. No. 30,736

Claims priority, application France, Apr. 16, 1975, 75 11770

Int. Cl.³ B32B *27/00;* **B29C** *3/00*

U.S. Cl. 428—422 **13 Claims**



1. A composite, complex, molded granular polytetrafluoroethylene product made from the method comprising:

a. compressing granular polytetrafluoroethylene powder at a pressure between about 10 and 50 bars to cohere the granules into a consolidated preform,

b. placing the preform in contact with additional polytetrafluoroethylene granules in an isostatic mold, and

c. subjecting the preform in step (b) to isostatic molding at a pressure between about 100 and 1000 bars to cohere the preform and the additional granules into a complex, molded, composite structure.

4,267,238

FLEXIBLE MAGNETIC RECORDING MEDIA LUBRICATED WITH FLUORINATED TELECHELIC POLYETHER POLYMER

John G. Chernega, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 18, 1979, Ser. No. 100,699

Int. Cl.³ G11B *5/78;* **B32B** *27/28*

U.S. Cl. 428—422 **7 Claims**

1. Magnetic recording medium comprising a flexible backing and magnetizable layer, said layer having a lubricating coating comprising a fluorinated telechelic polyether polymer having a backbone comprising $-C_aF_{2a}-O-$ units wherein a is an integer from 1 to 4, which backbone is terminated by at least one polar group, the μ^2/MW of the polymer being at least 19×10^{-4} Debye^2-moles/g, which lubricating coating reliably provides effective lubrication at 40° C. and 80% relative humidity.

4,267,239

VAPOR PERMEATION CURABLE COATINGS BASED ON ALKYD RESINS

Chacko Thankachan, Willowdale; John G. Ritchie, Mississauga; Eugene Sahayada, Toronto, and Asok Sengupta, Downsview, all of Canada, assignors to J.G.L. Chemicals Ltd., Toronto, Canada

Filed Sep. 19, 1979, Ser. No. 76,680

Int. Cl.³ C08L *91/00;* **B05D** *3/02;* **B32B** *27/40*

U.S. Cl. 428—425.1 **24 Claims**

18. An article comprising a substrate coated with a cured urethane coating derived from a urethane forming composition comprising

(i) an alkyd resin modified with p-hydroxy benzoic acid to provide side chain aromatic hydroxyl groups on the alkyd resin backbone, and

(ii) at least one organic isocyanate selected from the group consisting of di- and poly-isocyanates, said at least one isocyanate having an at least partial aromatic character, wherein

(iii) components (i) and (ii) are present in amounts such that the ratio of active hydroxyl hydrogen groups in (i) to isocyanate groups in (ii) is 1:1 to 1.5.

4,267,240

RELEASE SHEETS AND PROCESS OF USE

Richard F. Jaisle, Batesville, Ind., and Kenneth D. Bunkowski, Cincinnati, Ohio, assignors to Formica Corporation, Cincinnati, Ohio

Division of Ser. No. 93,414, Nov. 13, 1979. This application Apr. 28, 1980, Ser. No. 144,081

Int. Cl.³ B32B *21/06, 27/04, 29/06*

U.S. Cl. 428—484 **11 Claims**

1. A separator sheet comprising a web of paper having a water absorption of at least about 200 seconds, at least one side of which has been sized with a water-soluble salt of an alkaline earth metal or earth metal in an amount sufficient to provide a solids content of said salt distributed throughout the sized surface of said web ranging from about 0.001% to about 10%, by weight, based on the dry weight of the sized web, and then coated on its sized side with a film of a mixture of a salt of alginic acid and a triglyceride, lecithin or hydrolyzed lecithin.

7. A separator sheet according to claim 1 wherein said paper is corrugating medium kraft.

11. A separator sheet according to claim 1 wherein said web is phenol-formaldehyde resin impregnated.

4,267,241

METHOD OF PREPARING STEEL-BACKED ANTIFRICTION ALLOY, COMPOSITE STRIPS AND PRODUCTS THEREFROM

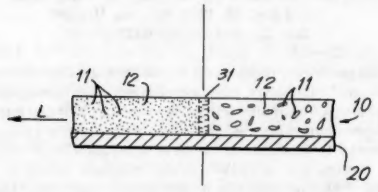
Duraid Mahrus, and Antonio C. Paulos, both of Sao Paulo, Brazil, assignors to Metal Leve S.A. Industria e Comercio, Brazil

Filed Sep. 11, 1979, Ser. No. 74,801

Claims priority, application Brazil, Sep. 15, 1978, 7806091

Int. Cl.³ C23C *1/06*

U.S. Cl. 428—645 **8 Claims**



1. A method for preparing an anti-friction bearing material composite comprising a steel backing-strip supporting at the interface therewith, on at least one side of said strip, an anti-friction alloy coating, said alloy of said coating consisting essentially of a higher-melting, hard-metal matrix phase having homogenously distributed therethrough a lower melting soft-metal inclusion phase, which comprises coating said steel strip with a metal mixture comprising said hard metal admixed with said soft metal, locally fusing said coated mixture from its outer surface to its interface with said steel backing strip by local impingement of a concentrated high-energy beam on said coating to form a uniform molten pool area of said higher melting and lower melting alloy at the area of impingement of said beam, and abruptly cooling and solidifying said molten pool by moving said beam-impinging area from said fused area to an adjacent locale and by conducting the fusion energy from said fused area by conduction into cooler portions of said coated strip to form in said cooled area a homogeneous solid dispersion of said soft-metal inclusion phase in said hard-metal matrix phase, and fusing and cooling successive areas of said coating by traversing locales of said coated strip until the entire area of said coated strip has been successively fused and solidified to provide the bearing material composite comprising the alloycoated steel strip wherein said alloy consists of substantially said soft-metal inclusion phase homogenously dispersed in said hard-metal matrix phase.

4,267,242

ELECTROCHEMICAL CELL

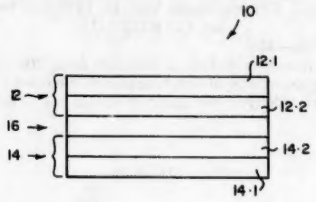
Johan Coetzer, and Michael M. Thackeray, both of Pretoria, South Africa, assignors to South African Inventions Development Corp., Pretoria, South Africa

Filed Oct. 18, 1979, Ser. No. 85,999

Claims priority, application South Africa, Oct. 23, 1978, 78/5950

Int. Cl.³ H01M *4/36*

U.S. Cl. 429—104 **25 Claims**



1. An electrochemical cell comprising an anode, a solid electrolyte and a cathode, the anode comprising one or more materials selected from the group consisting of silver, silver amalgams, silver alloys, copper, copper amalgams and copper alloys, the cathode comprising an electronegative element selected from the group consisting of the halogens, the chalcogens and phosphorus sorbed in a molecular sieve carrier having a pore size of less than 1 micron, and the solid electrolyte comprising a double or multiple salt system having a silver or copper halide as one of its components.

4,267,243

BIPOLAR STORAGE BATTERY OF EXTENDED SURFACE ELECTRODE TYPE

Robert H. Park, 1510 W. Demeter Dr., Freeport, Ill. 61032, and Clark A. Waage, 477 B Buckingham Dr., Lakehurst, N.J. 08733

Continuation-in-part of Ser. No. 958,122, Nov. 6, 1978, abandoned, and Ser. No. 908,447, May 22, 1978. This application Mar. 24, 1980, Ser. No. 133,561

Int. Cl.³ H01M *10/30, 2/26*

U.S. Cl. 429—136 **10 Claims**

1. A bipolar, extended surface alkaline battery comprising:

(A) barrier plates;

(B) dual porous electrode plates;

(C) separators;

(D) enclosure/supporting frames;

(E) externally accessible terminal means;

(F) externally accessible filling and/or venting means; and

(G) electrolyte

wherein

said barrier plates have rims and are composed of nickel or nickel-plated steel;

said dual porous electrode plates are composed of flexible rectangular nickel or nickel plated steel strips having perforated areas at each end which have been coated with a plaque of porous nickel; one half of said plates having

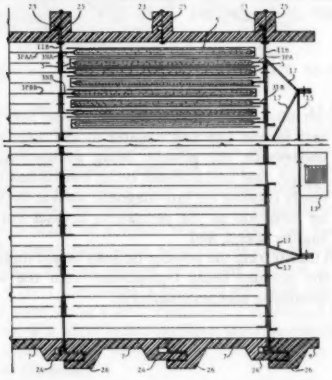
said porous plaque impregnated with active materials adapted to confer positive electrode polarity and the other half of said plates having said porous plaque impregnated with active materials adapted to confer negative electrode polarity, said plates being folded in half to form dual-leaf electrode pairs with "U" shaped channel base, each leaf being enclosed in said separator;

said separator being an envelope-shaped, ion-permeable sheet;

said enclosure/supporting frames being rectangularly shaped, four-sided plastic forms whose edges contain means for sequentially connecting one frame to another, one set of edges per frame having means for connecting said barrier plate, said frame having said externally accessible filling and/or venting means positioned so as to be above said electrolyte level;

whereby

internal subassemblies are composed of a number of said dual-leafed positive electrodes permanently affixed to one side of said barrier plates with an equal number of dual-



leafed negative electrodes permanently affixed to the opposite side of said barrier plates secured at one of the mating edges of at least one of said frames;

two terminal assemblies, one positive and one negative are composed of said negative dual-leafed electrodes permanently affixed to one side of said barrier plate and conductor strips with said externally accessible terminal means permanently affixed to the opposite side of said barrier in the case of a negative terminal assembly, said positive dual-leafed electrodes being used with positive terminal assemblies; said barrier plates secured on the edge outermost the battery of said frames

whereby

said battery is composed of a stack of said internal subassemblies assembled with electrodes of opposite polarity in interleafed relationship and said positive terminal assembly attached at one end of said stack with said negative terminal assembly attached at the other end of said stack;

said battery containing sufficient electrolyte to effectively produce an electrical potential between said externally accessible positive and negative terminal means.

4,267,244

LAYERED CHARGE TRANSFER COMPLEX CATHODES OR SOLID ELECTROLYTE CELLS

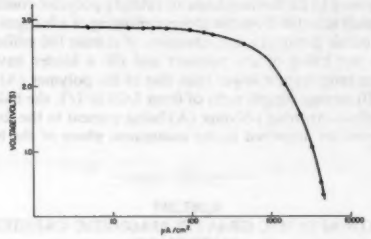
Demetrios V. Louzos, Rocky River, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Mar. 28, 1980, Ser. No. 134,864

Int. Cl.³ H01M *4/36*

U.S. Cl. 429—213 **13 Claims**

1. A layered cathode for use in solid electrolyte cell systems comprising a charge transfer complex in which the complex is the reaction product of at least one halogen (acceptor) with an organic compound (donor) and wherein an electronic conduc-



tor is dispersed within one layer of the charge transfer complex cathode and wherein a second layer of the charge transfer complex cathode does not contain the electronic conductor.

4,267,245

METHOD OF REMOVING FOREIGN MATERIALS FROM MAGNETIC DEVELOPERS

Kenichi Wada, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Japan

Filed Jul. 11, 1980, Ser. No. 167,521

Claims priority, application Japan, Jul. 25, 1979, 54-95260

Int. Cl.³ G03G *13/09, 21/00*

U.S. Cl. 430—97 **12 Claims**

1. A method for continuous removal of foreign materials from a particulate magnetic developer material comprising the steps of:

(a) substantially intermittently supplying said magnetic developer containing said foreign materials to the peripheral surface of a nonmagnetic sleeve containing a rotatable magnet roller concentrically disposed therein;

(b) causing a layer of said supplied developer to travel around the peripheral surface of said sleeve rotating said magnet roller, said developer moving in a direction opposite the direction of rotation of said magnet roller and said foreign materials also moving in the same direction as said developer material but at a substantially higher speed.

(c) recovering, at a position a specified distance away from the location of supply of said developer along said peripheral surface, the forward end portion of said layer of said supplied developer moving around the sleeve peripheral surface.

4,267,246

PRESSURE OR HEATED ROLLER ELECTROPHOTO IMAGE FIXING USES HALOGEN OR NITRILE CONTAINING POLYMER DISPERSED WITHIN RESIN BINDER AS OFFSET PREVENT TONER

Katsumi Nishibayashi, Hirakata; Yoshimi Amagai, Katano; Norio Hikake, Kyoto; Toshihiro Kouchi, Hirakata, and Tatsuo Aizawa, Osaka, all of Japan, assignors to Mita Industrial Company Limited, Katano, Japan

Division of Ser. No. 906,650, Jun. 5, 1978. This application Feb. 21, 1980, Ser. No. 123,463

Claims priority, application Japan, May 17, 1977, 52-55970; Jun. 14, 1977, 52-69444

Int. Cl.³ G03G *11/00, 13/16*

U.S. Cl. 430—98 **14 Claims**

1. In an electrostatic photographic process which comprises providing an electrostatic image on a photosensitive plate for electrostatic photography, developing the electrostatic image with a powder developer to form a powder image, transferring the powder image onto a transfer sheet and fixing the powder image on the transfer sheet, the improvement which comprises causing the transfer sheet bearing the powder image to fall in

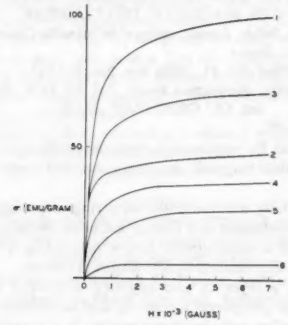
contact with a surface of a fixing roller under application of heat or pressure, said powder developer comprising a binder medium and a pigment dispersed therein, said binder medium comprising (A) a thermoplastic or rubbery polymer containing a member selected from the group consisting of a halogen atom and a nitrile group at a concentration of at least 100 milliequivalents per 100 g of the polymer and (B) a binder having a melting temperature lower than that of the polymer (A) at an (A)/(B) mixing weight ratio of from 1/20 to 1/1, the halogen- or nitrile-containing polymer (A) being present in the form of fine particles dispersed in the continuous phase of the binder (B).

4,267,247

LOW SPECIFIC GRAVITY MAGNETIC CARRIER MATERIALS

Ronald F. Ziolo, Webster, and Richard B. Lewis, Williamson, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 10, 1976, Ser. No. 722,234
Int. Cl.³ G03G *9/10*
U.S. Cl. 430—120 **7 Claims**



1. A magnetically-responsive, low density electrostatographic composite carrier particle having an average particle diameter of from between about 10 microns and about 850 microns, said carrier particle comprising a porous silicaceous material having an average bulk density of between about 0.2 and about 3.0 grams/cm³, said silicaceous material being micro-reticulated and having pores with an average pore size of from between about 10 and about 500 Angstroms, wherein said pores of said silicaceous material are impregnated with a magnetic or magnetically-attractable transition metal or metal oxide thereof in the form of connecting networks.

4,267,248

MAGNET-BRUSH DEVELOPMENT PROCESS OF ELECTRIC PATTERN IMAGES

Keitaro Yamashita, Kodama, and Ryuji Goto, Tokyo, both of Japan, assignors to Hitachi Metals, Ltd., Japan

Filed Feb. 26, 1979, Ser. No. 15,545
Claims priority, application Japan, Feb. 24, 1978, 53/20647
Int. Cl.³ G03G *13/09, 15/09*
U.S. Cl. 430—122 **14 Claims**

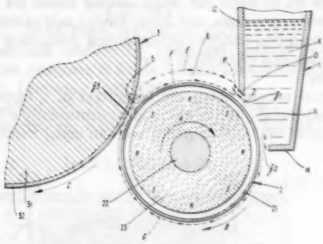
1. A process for developing latent electrographic images carried on an image carrier using magnetically attractable developer powder and a magnet roll, the powder flowing to the images through a first gap formed with the magnet roll, the magnet roll including a non-magnetic shell and a permanent magnet positioned within the shell, the shell and the magnet being independently rotatable, and the developer powder being attracted to the shell from a powder supply forming a second gap with the shell, the process comprising:

(a) transporting the attracted powder toward the first gap;

(b) forming an accumulation of the attracted powder on the surface of the shell in the vicinity of the first gap, both said transporting and forming steps being carried out by rotating the permanent magnet, the angular direction of said permanent magnet being such as to produce magnet peripheral motion away from the first gap and toward the supply;

(c) feeding a portion of the attracted powder in said accumulation into the first gap for developing the images; and

(d) circulating the powder remaining in said accumulation, said circulating step including:



(i) establishing an understream of powder flowing toward said second gap and counter to the direction of, and underneath, the powder being transported from the supply, said understream being established by concurrently rotating the non-magnetic shell in the same angular direction as the permanent magnet but at slower angular speed, and

(ii) transferring the powder flowing in said understream to the powder being transported from the supply, for stabilizing said accumulation.

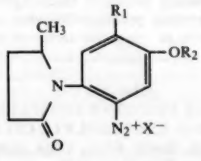
4,267,249

BENZENE DIAZONIUM SALTS AND DIAZOTYPE MATERIAL UTILIZING SAME

Niklaus Baumann, Marly, Switzerland, assignor to Aerni-Leuch AG, Kanton Bern, Switzerland

Filed Aug. 22, 1979, Ser. No. 68,565
Claims priority, application Switzerland, Aug. 22, 1978, 8923/78
Int. Cl.³ G03C *1/54;* C07C *113/04*
U.S. Cl. 430—187 **6 Claims**

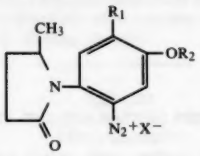
1. Photosensitive benzene diazonium compound of the formula:



(I)

wherein R_1 is p-methylphenylthio; R_2 is methyl, and X is an anion.

4. A one-component diazotype material having a support containing thereon a photosensitive layer comprising a photosensitive benzene diazonium salt of the formula



(I)

wherein R_1 is p-methylphenylthio; R_2 is methyl; and X is an anion.

4,267,250

COLOR DIFFUSION TRANSFER PHOTOGRAPHIC ELEMENT

Seiki Sakanoue; Kokichi Waki; Motohiko Tsubota; Osamu Takahashi, and Asao Nakatsuka, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Oct. 11, 1979, Ser. No. 83,706
Claims priority, application Japan, Oct. 12, 1978, 53-125600
Int. Cl.³ G03C *1/40, 1/10, 5/54, 1/76*
U.S. Cl. 430—214 **15 Claims**

1. A color diffusion transfer photographic element comprising a group of layers consisting essentially of, in sequence, a silver halide photographic emulsion layer, a dye releasing redox compound-containing layer associated with the silver halide photographic emulsion and capable of releasing a diffusible dye as a result of a redox reaction with the oxidation product of a developing agent produced by the development of silver halide with an alkaline processing solution, a spacer layer and a layer containing a ballasted anti-stain agent, the said spacer layer being a layer essentially containing a hydrophilic colloid or a silver halide emulsion layer having substantially the same spectral sensitivity as that of the associated silver halide emulsion.

15. The photographic element of claim **1**, comprising in sequence from the topmost layer: a protective layer, a blue-sensitive silver halide emulsion layer, a yellow dye-releasing redox compound-containing layer, a spacer layer, a layer containing a diffusion-resistant, antistain agent, a green-sensitive silver halide emulsion layer, a magenta dye-releasing redox compound-containing layer, a spacer layer, a layer containing a diffusion-resistant antistain agent, a red-sensitive silver halide emulsion layer, a cyan dye-releasing redox compound-containing layer, a light-intercepting layer containing a black pigment, a reflective layer containing a white pigment, a mordant layer containing a dye-mordanting agent.

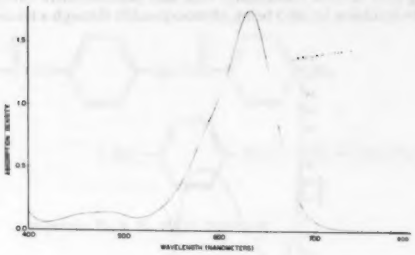
4,267,251

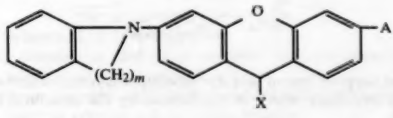
NOVEL IMAGE DYE-PROVIDING MATERIALS, PHOTOGRAPHIC PRODUCTS AND PROCESSES

Louis Locatell, Jr., Wellesley Hills; Charles M. Zepp, Boylston, and Ronald F. Ciecluch, Brookline, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

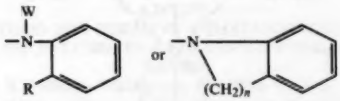
Filed Dec. 26, 1979, Ser. No. 106,506
Int. Cl.³ G03C *1/40, 7/00, 5/54, 1/10*
U.S. Cl. 430—224 **33 Claims**

18. A photosensitive element comprising a support, a silver halide emulsion in a layer carried by said support and an image dye-providing material containing at least one diffusion control moiety in a layer carried by said support on the same side thereof as said silver halide emulsion, said image dye-providing material being capable of providing an image dye containing the chromophoric system represented by the formula





wherein A is



X is H, alkyl, phenyl, naphthyl, substituted phenyl or substituted naphthyl; W is H or alkyl; R is H or alkyl; and m and n are each integers of from 2 to 6.

32. A diffusion transfer color film unit comprising

(a) a photosensitive element as defined in claim **18**;

(b) a second sheet-like element adapted to be superposed on said photosensitive element during or after photoexposure;

(c) an image-receiving layer positioned in one of said photosensitive or sheet-like elements; and

(d) a rupturable container releasably holding an aqueous alkaline processing composition and so positioned as to be adapted to distribute said processing composition between predetermined layers of said elements.

4,267,252

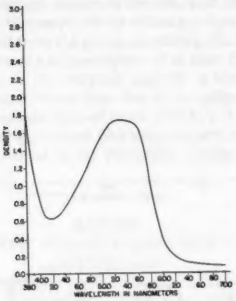
CHROME COMPLEXED MAGENTA DYE DEVELOPERS

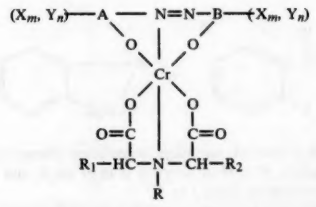
Elbert M. Idelson, West Newton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 1,449, Jan. 8, 1979, abandoned. This application Mar. 21, 1980, Ser. No. 132,546
Int. Cl.³ G03C *1/40, 1/10*
U.S. Cl. 430—225 **16 Claims**

8. A photographic film unit comprising a first support and a second support, at least one of said supports being transparent; a plurality of layers including at least one photosensitive silver halide emulsion layer associated with a dye developer layer carried on one of said supports; an image receiving layer carried on one of said supports; a rupturable container releasably holding a processing composition adapted, when distributed between a pair of predetermined layers carried by said supports, to develop said photosensitive silver halide emulsion layers and provide a diffusion transfer image in said image receiving layer; means providing a white light-reflecting layer between said image receiving layer and said silver halide emulsion layer(s) to mask said silver halide emulsion layers after development thereof and to provide a white background for a diffusion transfer image formed in said image receiving layer, said diffusion transfer image being viewable through said transparent support; said supports and the layers carried thereon

being held in fixed relationship with said photosensitive silver halide emulsion layer(s) being photoexposable through a transparent support, one of said dye developer layer(s) comprising a dye developer which is represented by the structural formula:





wherein A is a radical of benzene or naphthalene; B is a radical of benzene or naphthalene or a nitrogen-containing heterocyclic radical; Y is a silver halide developing substituent; each n is 0, 1 or 2 with the proviso that at least one n is 1; R is H, alkyl having 1 to 6 carbon atoms or X_m, X is the radical of an onium salt; each m is 0 or 1 with the proviso that only one m is 1; R_1 and R_2 are each H or when taken together represent the carbon atoms necessary to complete a five or six member heterocyclic moiety.

4,267,253

CHROME COMPLEXED MAGENTA DYE DEVELOPERS

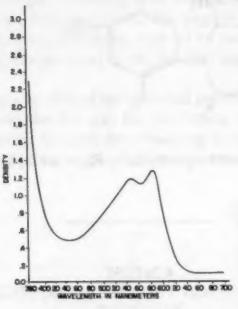
Elbert M. Idelson, West Newton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

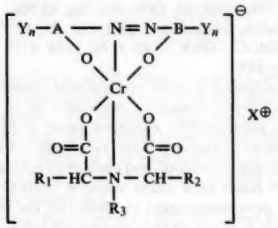
Continuation-in-part of Ser. No. 1,450, Jan. 8, 1979, abandoned. This application Mar. 21, 1980, Ser. No. 132,549

Int. Cl.[3] **G03C** *1/40, 1/10*

U.S. Cl. 430—225 **22 Claims**

11. A photographic film unit comprising a first support and a second support, at least one of said supports being transparent; a plurality of layers including at least one photosensitive silver halide emulsion layer associated with a dye developer layer carried on one of said supports; an image receiving layer carried on one of said supports; a rupturable container releasably holding a processing composition adapted, when distributed between a pair of predetermined layers carried by said supports, to develop said photosensitive silver halide emulsion layers and provide a diffusion transfer image in said image receiving layer; means providing a white light-reflecting layer between said image receiving layer and said silver halide emulsion layer(s) to mask said silver halide emulsion layers after development thereof and to provide a white background for a diffusion transfer image formed in said image receiving layer, said diffusion transfer image being viewable through said transparent support; said supports and the layers carried thereon being held in fixed relationship with said photosensitive silver halide emulsion layer(s) being photoexposable through a transparent support, one of said dye developer layer(s) comprising a dye developer which is represented by the structural formula:





wherein A is a radical of benzene or naphthalene; B is a radical of benzene or naphthalene or a nitrogen-containing heterocyclic radical; Y is a silver halide developing substituent; X is a photographically acceptable cation; each n is 0, 1 or 2 with the proviso that at least one n is 1; R_1 and R_2 are H or when taken together represent the carbon atoms necessary to complete a five or six member heterocyclic moiety; and R_3 is H or alkyl having from 1 to 6 carbon atoms.

4,267,254

PHOTOGRAPHIC PROCESS

Stanley M. Bloom, deceased, late of Waban, Mass. (by Arlene N. Bloom, executrix), and Krishna G. Sachdev, Cambridge, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 1, 1979, Ser. No. 80,349

Int. Cl.[3] **G03C** *5/54, 7/00, 5/38*

U.S. Cl. 430—245 **15 Claims**

1. A diffusion transfer photographic process comprising the steps of:

(a) exposing a positive-negative diffusion transfer film unit comprising a support carrying an additive color screen, a photosensitive silver halide emulsion layer and a silver precipitating layer through said additive color screen in imagewise fashion;

(b) developing the exposed silver halide emulsion layer by contacting it with a photographic processing composition comprising an aqueous alkaline solution including a silver halide developing agent and a silver complexing agent, said silver complexing agent being stable in an alkaline environment, having a melting point less than about 50° C. and wherein the log of the stability constant (β) for a 1:1 complex of said silver complexing agent with silver is at least 10.5, wherein a silver complex which is soluble in said alkaline solution is formed between undeveloped silver halide and said silver complexing agent; and

(c) transferring said silver complex to said silver precipitat-

ing layer and forming a silver image therein, wherein said process is carried out while retaining said film unit intact and without washing the unit.

4,267,255

NOVEL PHOTOGRAPHIC PROCESSING COMPOSITION

Karl J. Schreiber, Waban, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 32,887, Apr. 24, 1979, abandoned. This application Dec. 12, 1979, Ser. No. 102,670

Int. Cl.³ G03C *5/54, 1/48, 5/30, 1/02*

U.S. Cl. 430—245 **24 Claims**

12. The method which comprises contacting an exposed silver diffusion transfer film unit which comprises a support, carrying on one surface, a layer comprising silver-precipitating nuclei, and a photosensitive silver halide layer; with a photographic processing composition comprising an aqueous alkaline solution, a silver halide developing agent and a surfactant comprising a hydrophobe and a polyethylene oxide portion containing an average of about 5–25 units of ethylene oxide per hydrophobe wherein said hydrophobe is a fluorinated hydrocarbon or an organo silicone.

20. The method of claim **12** wherein said film unit includes an additive color screen.

4,267,256

NOVEL SILVER COMPLEXING AGENTS

Stanley M. Bloom, deceased, late of Waban, Mass. (by Arlene N. Bloom, executrix), and Krishna G. Sachdev, Cambridge, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 1, 1979, Ser. No. 80,350

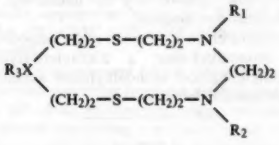
Int. Cl.³ G03C *5/54, 1/48, 5/38, 1/06*

U.S. Cl. 430—251 **16 Claims**

1. A diffusion transfer photographic process comprising the steps of:

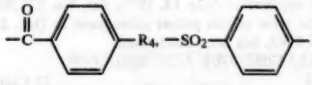
(a) reacting exposed silver halide in an imagewise exposed photosensitive silver halide emulsion layer carried on a support with a silver halide developing agent in aqueous alkaline solution;

(b) reacting unreduced silver halide in said photosensitive smulsion with at least one silver complexing compound to form a complex silver salt which is soluble in said alkaline solution, said silver complexing compound being represented by the formula



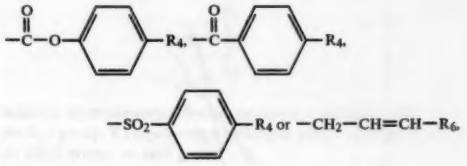
wherein X is selected from the group consisting of oxygen, nitrogen, and sulfur:

R_1 and R_2 are the same or different and are H. alkyl, hydroxyalkyl, alkoxyalkyl,



wherein R_4 is H, alkyl, alkoxy or $—NO_2$ and R_5 is H, alkyl, alkoxy or alkoxyalkyl; provided that

where X is —N—, R_3 is H, alkyl, hydroxyalkyl, alkoxyalkyl,



wherein R_6 is H, alkyl, cyano or

wherein R_7 is H or alkyl;

(c) transferring said silver complex salt to a superposed image-receiving layer; and

(d) reducing said complex silver salt on said image-receiving layer to provide a silver image thereon.

4,267,257

METHOD FOR FORMING A SHALLOW SURFACE RELIEF PATTERN IN A POLY(OLEFIN SULFONE) LAYER

Eugene S. Poliniak, Willingboro, and Nitin V. Desai, Edison, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jul. 30, 1976, Ser. No. 710,135

Int. Cl.³ B05D *3/06*

U.S. Cl. 430—270 **2 Claims**

1. A method for forming a surface relief pattern in a metal layer which comprises:

(a) exposing a poly (3-methyl-1-cyclopentene sulfone) layer to a modulated beam of electrons whereby the portion of the polymer layer exposed to the electron beam becomes more soluble in a solvent developer than the unexposed portions;

(b) contacting the exposed polymer layer to a solvent developer which is a mixture of about 50% by weight cycloheptanone and about 50% by weight 2-methylcyclohexanol whereby a surface relief pattern is formed in the polymer layer; and

(c) depositing a metal layer on the surface relief pattern in the polymer layer whereby the surface relief pattern is formed in the metal layer.

4,267,258

NEGATIVE TYPE DEEP ULTRAVIOLET RESIST

Yasuhiro Yoneda, Yokohama; Kenro Kitamura, Fujisawa; Jiro Naito, Yamanishi, and Toshisuke Kitakohji, Machida, all of Japan, assignors to Fujitsu Limited, Tokyo, Japan

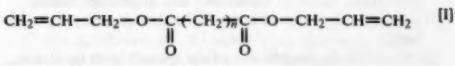
Filed Dec. 10, 1979, Ser. No. 101,688

Claims priority, application Japan, Dec. 15, 1978, 53-156136

Int. Cl.³ G03C *1/68*

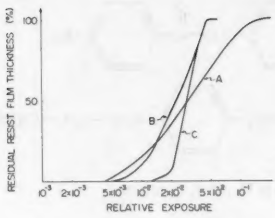
U.S. Cl. 430—270 **12 Claims**

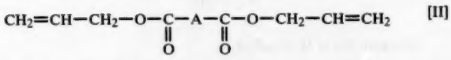
1. A negative type resist for deep ultraviolet light lithography derived from a polymer selected from the group consisting of (i) diallyl esters of aliphatic dicarboxylic acids having the general formula



[I]

where n is zero or an integer from 1 to 8, and (ii) diallyl esters of aromatic dicarboxylic acids having the general formula





[II]

where A is a phenylene or a naphthylene group, the degree of dispersion of said polymer within the range from 1 to 3.

4,267,259

EXPOSURE PROCESS

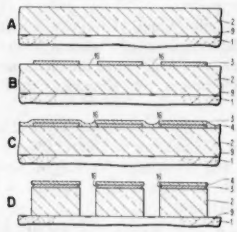
Harald Bohlen, Boeblingen; Johann Greschner, Pliezhausen; Werner Külcke, and Peter Nehmiz, both of Boeblingen, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 16, 1979, Ser. No. 12,634

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1978, 2807478

Int. Cl.³ B05D *3/06;* **G03F** *7/26*

U.S. Cl. 430—296 **10 Claims**



1. A process for x-ray exposing a radiation sensitive layer comprising the following steps:

(a) applying a first, x-ray sensitive layer to a semiconductor wafer, used for the manufacture of a plurality of integrated circuits, on which are provided alignment marks between the individual surface areas destined to accomodate said integrated circuits,

(b) applying a second, superimposed x-ray absorbing metal layer only to the individual surface areas destined to accomodate said integrated circuits,

(c) applying a third, superimposed electron beam sensitive layer,

(d) removing the areas of the x-ray sensitive layer and the electron beam sensitive layer over the alignment marks by exposure and development to bare the alignment marks,

(e) electron beam exposing the third layer in the form of a pattern defining the areas of the first layer which are to be x-ray exposed after alignment of the individual surface areas using electron beams and said alignment masks,

(f) removing the exposed areas of the third layer by development,

(g) removing the bared areas of the second layer by etching, and

(h) exposing the first layer to x-rays through the opening in the second layer which serves as a mask.

4,267,260

DEVELOPER FOR LITHOGRAPHIC PRINTING PLATE

Konoe Miura; Chihiro Eguchi, both of Yokohama; Yoshihiro Takahashi, Tokyo; Akinobu Oshima, Kawasaki; Kazuo Torige, and Shinichi Bunya, both of Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

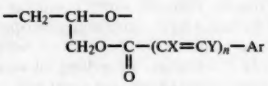
Filed Jul. 19, 1976, Ser. No. 706,600

Claims priority, application Japan, Jul. 31, 1975, 50-93467

Int. Cl.³ G03C *5/24;* **G03F** *7/02*

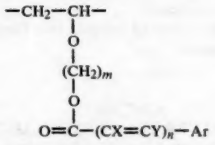
U.S. Cl. 430—302 **6 Claims**

1. A method for developing the exposed image of a lithographic photosensitive polymer containing repeating units of the formula:



(4)

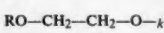
or the formula:



(5)

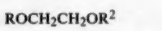
wherein X and Y represent hydrogen, halogen, cyano or nitro; Ar represents an aryl group which can be substituted and m and n each represent an integer of 1 to 2, which comprises:

treating said exposed lithographic photosensitive medium with a developer consisting essentially of an image developable amount of a compound of the formula:



(2)

or



(3)

wherein R represents an alkyl groups with a carbon number of 1 to 4, R^1 represents hydrogen or an acyl group, R^2 represents an acyl group with a carbon number of 2 to 5, and k represents an integer of 2 to 3, for a time sufficient to dissolve and remove only the unexposed portions of said photosensitive medium.

2. The method of claim 1, wherein said compound is a diethyleneglycol monoalkylether, a triethyleneglycolmonoalkylether, a diethyleneglycol monoalkylether acetate, or a triethyleneglycolmonoalkylether acetate.

4,267,261

METHOD FOR FULL FORMAT IMAGING

Robert W. Hallman, San Diego, Calif.; Stanford R. Ovshinsky, Bloomfield Hills, Mich., and John P. de Neufville, Mendham, N.J., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 162,842, Jul. 15, 1971, abandoned. This application May 13, 1975, Ser. No. 577,003

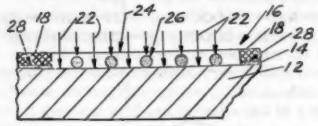
The portion of the term of this patent subsequent to Dec. 28, 1993, has been disclaimed.

Int. Cl.³ G03C *5/04, 5/24;* **B05D** *3/06*

U.S. Cl. 430—322 **22 Claims**

1. The method of producing an image by full format imaging, which method comprises the step of providing on a substrate a solid continuous film of a dispersion imaging material which, upon application of a short pulse of high intensity radiant energy in an amount sufficient to increase the absorbed

energy in the material above a certain threshold value, is capable of changing to a substantially molten state in which the surface tension of the material acts to cause the continuous film where subject to said energy pulse to change to a discontinuous film comprising spaced globules and free space therebetween in the film which are frozen in place following said energy pulse and through which free space light can pass, the step of applying a short pulse of high intensity non-coherent radiant energy through an imaging mask having a full format image pattern including portions of higher transmissiveness and portions of lower transmissiveness for said energy pulse to said continuous film of dispersion imaging material simultaneously and substantially evenly in a full format pattern, wherein said full format pattern of the simultaneously and substantially evenly applied energy pulse includes a plurality of



areas in which the intensity and pulse width of said energy is sufficient to increase simultaneously and substantially evenly the absorbed energy in the corresponding pattern areas of said dispersion imaging material above said threshold value, and wherein the amount of the radiant energy pulse supplied in a plurality of other areas is insufficient to increase the absorbed energy above said threshold value, thereby causing the material of the continuous film in those pattern areas simultaneously and substantially evenly receiving the higher amount of the non-coherent radiant energy pulse to change to the discontinuous film comprising the spaced globules and free space in the film which are substantially evenly distributed in said pattern areas and through which free space light can pass to provide at one time a stable finished full format image pattern of said discontinuous film in the continuous film corresponding to said full format pattern of the energy pulse.

4,267,262

COLOR DIFFUSION TRANSFER PHOTOGRAPHIC ELEMENTS COMPRISING A NEUTRALIZING SYSTEM TIMING LAYER

Yukio Karino; Shinji Sakaguchi, and Yoshio Sakakibara, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

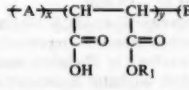
Filed Apr. 3, 1979, Ser. No. 26,510

Claims priority, application Japan, Apr. 3, 1978, 53-38932

Int. Cl.³ G03C *1/40, 1/48, 1/76, 5/38*

U.S. Cl. 430—463 **21 Claims**

1. In a photographic element for the color diffusion transfer process comprising a support having a neutralizing system for reducing the pH of an alkaline processing composition, said neutralizing system comprising a neutralizing layer and a timing layer or layers, said timing layer or layers being directly or indirectly disposed on or under said neutralizing layer in such a positional relationship that the aforementioned alkaline processing composition reaches the neutralizing layer through the timing layer or layers, the improvement which comprises: at least one of said timing layers containing a mixture of acetyl cellulose and a polymer represented by the general formula (I):



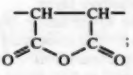
wherein A represents a repeating unit represented by the formula (II):

wherein R_2 represents a hydrogen atom, a halogen atom, or a methyl group; R_3 represents a hydrogen atom, a halogen atom, an alkyl group, an aryl group,

a $-(CH_2)_a-OR_4$ group, a $-(CH_2)_a-O-\overset{\overset{O}{\|}}{C}-R_5$ group, or

a $-\overset{\overset{O}{\|}}{C}-O-R_6$ group;

R_4 represents an alkyl group or an aralkyl group; R_5 and R_6, which may be the same or different, each represents an alkyl group, an aryl group or an aralkyl group; and a represents 0 or 1; R_1 represents an alkyl group, an aryl group or an aralkyl group; B represents a repeating unit derived from an ethylene-type monomer different than A excluding substantially



x represents about 20 to 90 mol%; y represents about 10 to 80 mol%; and z represents about 0 to 30 mol%.

4,267,263

USE OF β-AMINOETHYL CARBAMIC ACID FOR PRODUCING PHOTOGRAPHIC BATHS AND DEVELOPER COMPOSITIONS

Friedrich-Wilhelm Kunitz; Erich Wolff, and Karl Frank, all of Leverkusen, Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Dec. 12, 1979, Ser. No. 102,999

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1978, 2854942

Int. Cl.³ G03C *5/30*

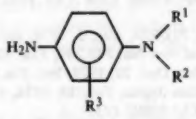
U.S. Cl. 430—469 **8 Claims**

1. The method of preparing a developer composition for processing color photographic materials, said composition used in development of exposed silver halide emulsion material of the photographic material,

including the steps of

first preparing a solution comprising a developer substance corresponding to the following general formula:

FORMULA (I)



in which

R^1 and R^2 may be the same or different and represent alkyl containing from 1 to 4 C-atoms;

R^3 represents hydrogen or alkyl containing from 1 to 4 C-atoms, wherein R^1, R^2 and R^3 may optionally be substituted by OH, O-alkyl, SO_3H or $NH—SO_2—CH_3$;

and adding to the composition the accelerator β-aminoethyl carbamic acid in an amount to effectively accelerate development with said composition.

4,267,264

COLOR PHOTOGRAPHIC RECORDING MATERIAL

Joachim W. Lohmann, Kuerten; Otto Lapp, and Erwin Ranz, both of Leverkusen, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 873,740, Jan. 31, 1978, abandoned. This application Jan. 28, 1980, Ser. No. 115,923

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1977, 2704826

Int. Cl.[3] G03C 1/76

U.S. Cl. 430—505 4 Claims

1. The color photographic recording material consisting of

(a) a layer support having applied to it a plurality of layers including light-sensitive layers and including

(b) three green-sensitive silver halide emulsion component layers of different speed each having associated with it a magenta-forming coupler including a least-sensitive green-sensitive silver halide emulsion layer, a more-sensitive green-sensitive silver halide emulsion layer having the ratio of silver halide to coupler higher than in the least-sensitive green-sensitive layer and arranged further from said layer support than said least-sensitive green-sensitive layer and a most-sensitive green-sensitive silver halide emulsion layer having a ratio of silver halide to coupler higher than in the more-sensitive green-sensitive layer and arranged further from said layer support than said more-sensitive green-sensitive layer;

(c) two red-sensitive silver halide component layers of different speed each having associated with it a cyan-forming coupler, including a less-sensitive red-sensitive silver halide emulsion layer, and a more-sensitive red-sensitive silver halide emulsion layer having a ratio of silver halide to coupler higher than in the less-sensitive red-sensitive layer;

(d) at least one non-light-sensitive yellow filter layer is located further removed from the layer support than any one of said red-sensitive layers, and green-sensitive layers, and

(e) one or more blue-sensitive silver halide emulsion layers each having associated with it a yellow-forming coupler and being located further removed from the layer support than said yellow filter layer;

wherein the improvement comprises each of the green-sensitive layers being arranged further away from the layer support than the less-sensitive red-sensitive layer, the more-sensitive red-sensitive layer is located between the more-sensitive green-sensitive layer and the most-sensitive green-sensitive layer,

whereby said more sensitive red-sensitive layer being less adjacent the layer support than said more-sensitive green-sensitive layer and said less-sensitive red-sensitive layer.

4,267,265

PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Naohiko Sugimoto; Ikutaro Horie; Kameji Nagao; Masakazu Yoneyama, all of Minami-ashigara; Yasuhiro Nakayama, Fujimiya, and Nobuo Yamamoto, Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 711,920, Aug. 5, 1976, abandoned, which is a continuation of Ser. No. 549,259, Feb. 12, 1975, abandoned. This application Dec. 29, 1978, Ser. No. 974,460

Claims priority, application Japan, Feb. 13, 1974, 49-17393

Int. Cl.[3] G03C 1/31

U.S. Cl. 430—523 13 Claims

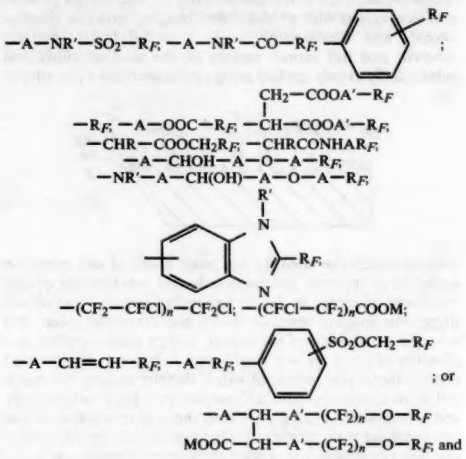
1. In a photographic light-sensitive material containing a support comprising thereon at least one light-sensitive silver halide emulsion layer and a protecting layer, the said material containing at least one hygroscopic or adhesive plasticizer compound selected from the group consisting of cyclohexanediol, cyclohexane dimethanol, dibutyl phthalate, tricresyl phosphate, 1,2-hexanediol, tri-N-(2-hydroxyethyl) cyanuric acid and polyglycidol in at least one of the said layers on the support, the improvement wherein in the said protecting layer contains and/or the said light-sensitive halide emulsion layer, in amounts in combination sufficient to improve adhesion resistance and antistatic properties

(a) at least one organic fluoro-compound selected from group consisting of compounds having the general formula (1) to (3),

(1) W_1–Y_1

wherein

W_1 represents

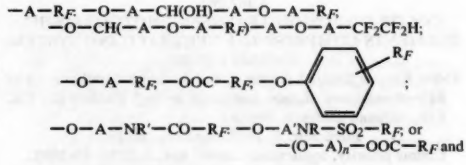


Y_1 represents —SO_3M; —OSO_3M; —COOM; or —PO_3M_2;

(2) W_2–Y_2

wherein

W_2 represents

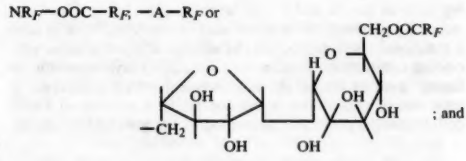


Y_2 represents —$(CH_2CH_2O)_nH$ or —$(CH_2CH_2O)_nR'$;

(3) W_3–Y_3

wherein

W_3 represents

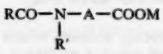


Y_3 represents —OH or —OOCR'

in the above general formulae (1) to (3), R represents an alkyl group having 1 to 32 carbon atoms, R' represents a hydrogen atom or an alkyl group having 1 to 32 carbon atoms, A and A' each represents a divalent aliphatic hydrocarbon group, M represents a hydrogen atom or an alkali metal atom or an ammonium group dissociating into an ion in an aqueous solu-

tion, R_F represents a perfluoroalkyl group having 1 to 22 carbon atoms, and n represents 0 or an integer ranging from 1 to 20; and

(b) a carboxy group-containing compound of the general formula (6)



(6)

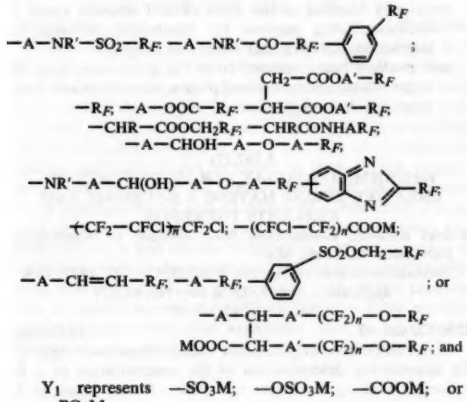
wherein R represents an alkyl group having 1 to 32 carbon atoms; R′ represents a hydrogen atom or an alkyl group having 1 to 32 carbon atoms; A represents a divalent aliphatic hydrocarbon group, and M represents a hydrogen atom, an alkali metal atom or an ammonium group, dissociating into an ion in an aqueous solution.

7. In a method for improving the adhesion resistance and antistatic properties of a photographic light-sensitive material having a silver halide emulsion layer and containing a hygroscopic or adhesive plasticizer compound selected from the group consisting of cyclohexanediol, cyclohexane dimethanol, dibutyl phthalate, tricresyl phosphate, 1,2-hexanediol, tri-N-(2-hydroxyethyl) cyanuric acid and polyglycidol in a layer on a support, the improvement which comprises impregnating a protecting layer and/or an emulsion layer of the light-sensitive material containing at least one organic fluorocompound selected from group consisting of compounds having the general formula (1) to (3);

(1) W_1–Y_1

wherein

W_1 represents

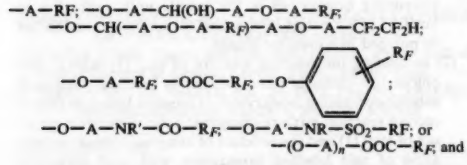


Y_1 represents $-SO_3M$; $-OSO_3M$; $-COOM$; or $-PO_2M_2$;

(2) W_2–Y_2

wherein

W_2 represents

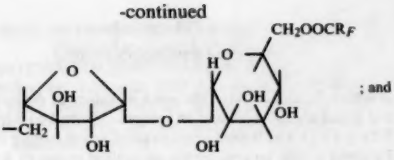


Y_2 represents $-(CH_2CH_2O)_nH$ or $-(CH_2CH_2O)_nR'$

(3) W_3–Y_3

wherein W_3 represents

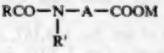
-continued



; and

Y_3 represents —OH or —OOCR′,

wherein in the general formulae (1) to (3), R represents an alkyl group having 1 to 32 carbon atoms, R′ represents a hydrogen atom or an alkyl group having 1 to 32 carbon atoms, A and A′ each represents a divalent aliphatic hydrocarbon group, M represents a hydrogen atom or an alkali metal atom or an ammonium group dissociating into an ion in an aqueous solution; R_F represents a perfluoroalkyl group having 1 to 22 carbon atoms; and n represents 0 or an integer ranging from 1 to 20; with an aqueous solution containing at least one carboxy group-containing compound of the general formula (6)



(6)

wherein R represents an alkyl group having 1 to 32 carbon atoms; R′ represents a hydrogen atom or an alkyl group having 1 to 32 carbon atoms; A represents a divalent aliphatic hydrocarbon group, and M represents a hydrogen atom, an alkali metal atom or an ammonium group dissociating into an ion in aqueous solution.

4,267,266

PHOTOGRAPHIC FILMS

Toshiaki Shibue, and Koichi Nagayasu, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

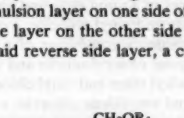
Filed Aug. 1, 1979, Ser. No. 62,804

Claims priority, application Japan, Aug. 7, 1978, 53-96001

Int. Cl.³ G03C *1/80, 1/82*

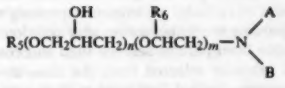
U.S. Cl. 430—530 **16 Claims**

1. A photographic film having at least one light-sensitive silver halide emulsion layer on one side of a support and at least one reverse side layer on the other side of the support which comprises, in said reverse side layer, a compound represented by formula [I]:



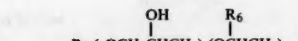
[I]

wherein R_1, R_2, R_3 and R_4 each represent a hydrogen atom or an aliphatic acyl group having from 12 to 24 carbon atoms provided that at least three of R_1, R_2, R_3 and R_4 each represent an aliphatic acyl group having from 12 to 24 carbon atoms, and a tertiary amine represented by the formula [II]:

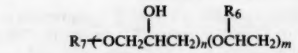


[II]

wherein R_5 represents an alkyl group having from 8 to 24 carbon atoms; R_6 represents a hydrogen atom, a methyl group or a group $—CH_2OR_7$ in which R_7 means a hydrogen atom, an alkyl group having from 1 to 7 carbon atoms, an aryl group or an aralkyl group; m and n each represent an integer of from 0 to 3 (provided $3 \geqq m+n \geqq 1$); A represents a group



in which R_6 and R_7 have the same meanings as defined above, and p and q each represent an integer of from 1 to 3 (provided $3 \geqq p+q \geqq 1$); and B represents an alkyl group having from 1 to 7 carbon atoms, an aryl group, an aralkyl group or a group



in which R_6, R_7, m and n have the same meanings as defined above.

4,267,267

THERMALLY-DEVELOPABLE LIGHT-SENSITIVE ELEMENTS

Shinpei Ikenoue, and Takao Masuda, both of Minami-Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation-in-part of Ser. No. 868,167, Jan. 9, 1978, abandoned. This application Oct. 2, 1979, Ser. No. 81,237
Claims priority, application Japan, Jan. 2, 1977, 52/2051
Int. Cl.³ G03C *1/02*
U.S. Cl. 430—533 **31 Claims**

1. In a thermally developable light-sensitive element comprising a support having in one or more layers thereon at least (a) an organic silver salt, (b) light-sensitive silver halide grains and (c) a reducing agent, the improvement wherein the average grain size of the light-sensitive silver halide grain is 0.05μ or larger, the support is a gas-permeable support and the support has thereon a subbing layer comprising at least one copolymer selected from the group consisting of a vinyl chloride copolymer in which vinyl chloride is present in the copolymer in an amount of 50 mol % to 98% and a vinylidene chloride copolymer in which vinylidene chloride is present in the copolymer in an amount of 50 mol % to 98 mole %, whereby the light-sensitive element shows reduced thermal fog with the passage of time, said vinyl chloride type copolymer or the vinylidene chloride type copolymer is selected from the group consisting of a copolymer of a vinyl ester and vinyl chloride, a copolymer of an acrylate and vinyl chloride, a copolymer of a maleate and vinyl chloride, a copolymer of a fumarate and vinyl chloride, a copolymer of acrylonitrile and vinyl chloride, a copolymer of a vinyl alkyl ether and vinyl chloride, a copolymer of vinyl chloride and vinylidene chloride, a copolymer of acrylonitrile and vinylidene chloride, or a copolymer of a vinyl ester and vinylidene chloride.

4,267,268

SPERMATOZOA EXTENDERS

Robert A. Nelson, Jr., 340 Promenade East, #138, Portland, Me. 04101

Filed Mar. 12, 1979, Ser. No. 19,308
Int. Cl.³ A01N *1/02*
U.S. Cl. 435—2 **10 Claims**

1. A solution for use in porcine artificial insemination, said solution comprising an extender which acts to prolong motility and fertility of porcine sperm before or after dilution of said sperm, is obtainable from porcine seminal fluid and contains a protein material extender selected from the class consisting essentially of a porcine seminal fluid protein having a molecular weight of about 800,000, a porcine seminal fluid protein having a molecular weight of about 200,000, a porcine seminal fluid protein having a molecular weight of about 30,000, a porcine seminal fluid protein having a molecular weight of about 10,000, a porcine seminal fluid protein having a molecular weight of about 9,000, and mixtures thereof.

4,267,269

RED CELL STORAGE SOLUTION

Gerald A. Grode, Grayslake, and Jeffrey E. Miripol, Evanston, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Feb. 5, 1980, Ser. No. 118,695
Int. Cl.³ A01N *1/02*
U.S. Cl. 435—2 **16 Claims**

1. An aqueous cell storage solution which contains per 100 ml. of solution essentially from 5 to 50 mg. of adenine; from 1000 to 3500 mg. of a sugar selected from the group consisting of glucose and fructose; from 400 to 1200 mg. of sodium chloride; and from 250 to 2000 mg. of mannitol.

4,267,270

METHOD FOR THE DETERMINATION OF ANTIGENS AND ANTIBODIES USING SITE-DEACTIVATING MEDIA

Robert L. Stout, Overland Park, Kans., assignor to Enzyme Technology, Inc., Overland Park, Kans.

Filed May 21, 1979, Ser. No. 40,641
Int. Cl.³ G01N *33/54*
U.S. Cl. 435—7 **6 Claims**

1. In a process for the determination of the presence of a component of an antigen-antibody reaction in a sample, which comprises the steps of placing said sample, the antigen component of said reaction, and the antibody component of said reaction, is a reaction vessel, allowing said antigen-antibody reaction to proceed, and thereafter determining whether said sample contained said component, one of said antigen and antibody components having been labeled, the improvement which comprises:

covalently bonding to the walls of said reaction vessel a site-deactivating medium for minimizing non-specific interactions between said vessel and sample,

said medium being selected from the group consisting of water soluble animal-derived plasma, animal-derived sera, vegetable-derived gelatins and mixtures thereof.

4,267,271

RADIOIMMUNOASSAY FOR ISOENZYMES OF CREATIVE KINASE HAVING A B-SUBUNIT AND REAGENTS THEREFOR

Robert Roberts, Chesterfield, Mo., assignor to Washington University, St. Louis, Mo.

Continuation-in-part of Ser. No. 846,095, Oct. 27, 1977. This application Aug. 1, 1979, Ser. No. 62,777
Int. Cl.³ C12Q *1/66*
U.S. Cl. 435—7 **14 Claims**

1. A competitive displacement radioimmunoassay method for quantitative determination of the concentration of a B subunit-containing isoenzyme of human creatine kinase in a sample, said method comprising:

(1) incubating said sample with a pre-determined stoichiometric excess quantity of antibodies to purified MB creatine kinase to form a first reaction mixture comprising (a) the product of antigen-antibody association of B subunit-containing isoenzymes in the sample with antibodies to purified MB creatine kinase, and (b) unreacted antibodies to purified MB creatine kinase;

(2) incubating the reaction mixture of step (1) with a stoichiometric excess of radioisotopically labelled, purified B subunit-containing isoenzymes of creatine kinase to form a second reaction mixture comprising the association product of step (1) and the product of antigen-antibody association of said labelled isoenzymes with said unreacted antibodies in said first reaction mixture; and

(3) removing unreacted labelled isoenzymes from said second reaction mixture and ascertaining the concentration of B subunit-containing isoenzymes in said sample on the basis of the extent of antigen-antibody association between said antibodies and said labelled isoenzyme.

4,267,272

PROSTATIC ACID PHOSPHATASE IMMUNO ASSAY

Lee Josephson, Arlington, Mass., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Nov. 5, 1979, Ser. No. 91,622
Int. Cl.[3] C12Q *1/66*
U.S. Cl. 435—7 8 Claims

1. In an immunoassay for PAP wherein the amount of PAP in PAP standards is determined, the improvement comprising contacting the standards with a composition for stabilizing the enzymatic activity of PAP under conditions that would otherwise render the standard PAP ineffective in displacing tracer PAP from PAP antibody thereby also stablizing the PAP immunological activity.

4,267,273

ENZYME PREPARATION HAVING AFFINITY FOR WATER-IMMISCIBLE LIQUIDS

Richard A. G. Smith, Wallington, England, assignor to Beecham Group Limited, England

Continuation of Ser. No. 912,363, Jun. 5, 1978, abandoned, which is a continuation of Ser. No. 769,047, Feb. 16, 1977, abandoned, which is a continuation of Ser. No. 603,148, Aug. 8, 1975, abandoned. This application Apr. 12, 1979, Ser. No. 29,204
Claims priority, application United Kingdom, Aug. 13, 1974, 35556/74; Apr. 26, 1975, 17434/75
Int. Cl.[3] C12P *37/06;* C12N *11/00, 11/10*
U.S. Cl. 435—44 27 Claims

1. In an enzyme preparation having an enzyme portion and a polymeric support in which the enzyme portion is covalently bound directly to the polymeric support or is covalently bound to an inert bridging group which bridging group is in turn covalently bound to said polymeric support, the improvement which comprises the presence of a plurality of hydrophobic groups covalently bound to either or both of said enzyme portion and said polymeric support, said hydrophobic groups being hydrophobic at least by reason of a free terminal nonpolar hydrocarbon portion of six or more carbon atoms, and being present in said enzyme preparation in such proportion as to impart, without deactivation of the enzyme portion, sufficient overall hydrophobic properties to said enzyme preparation to permit separation of the preparation from aqueous media through preferential association with an inert water-immiscible organic liquid.

4,267,274

STREPTOMYCES MEDITERRANEI MUTANT CAPABLE OF PRODUCTION OF RIFAMYCIN B

Richard J. White, Como, and Giancarlo Lancini, Pavia, both of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

Division of Ser. No. 354,811, Apr. 26, 1973, Pat. No. 3,871,965. This application Jun. 13, 1974, Ser. No. 479,018
Int. Cl.[3] C12N *1/20;* C12R *1/465*
U.S. Cl. 435—253 2 Claims

1. A biologically pure culture comprising a new microorganism mutant identified as *Streptomyces mediterranei M* 18, ATCC 21789, and a nutrient medium consisting essentially of an assimilable carbon source, an assimilable nitrogen source and essential mineral salts, said culture being capable of producing rifamycin B in a recoverable quantity upon fermentation.

4,267,275

METHOD OF RECOVERING PRODUCTS OF HIGH PROTEIN CONTENT FROM PROTEIN-POLYSACCHARIDE COMPLEXES

Hans Müller, Im Allmendli, 8703 Erlenbach, Switzerland, assignor to Dr. Ing Hans Müller, Mannedorf, Switzerland

Continuation of Ser. No. 704,914, Jul. 13, 1976, abandoned. This application Oct. 18, 1978, Ser. No. 952,265
Claims priority, application Switzerland, Jul. 28, 1975, 9908/75; Feb. 12, 1976, 1828/76
Int. Cl.[3] C07G *7/00;* A23J *3/00*
U.S. Cl. 435—272 2 Claims

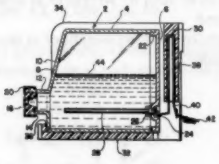
1. A method of recovering both a water-soluble and a water-insoluble protein fraction from a protein-polysaccharide complex, said method consisting essentially of subjecting wheat gluten to a treatment with a starch degrading enzyme in the presence of water at a temperature of about 75° C. for a period of about ½ to 2 hours so as to decompose at least a portion of the polysaccharide content of said gluten and dissolve at least a portion of the protein content of said gluten, thereby obtaining an aqueous suspension of solids, thereafter separating said suspension by filtration or centrifuging into (a) a solids fraction which after drying results in a first protein fraction and (b) a liquid fraction which after concentration and drying constitutes a second protein fraction, and recovering and combining both of these fractions so as to obtain a total concentration of protein substantially above 60% in the form of a high protein product obtained both from the water insoluble and the water-soluble protein fraction.

4,267,276

MEDICAL SPECIMEN CULTURE BOTTLE

Andrew B. Crawford, Jr., and Gerald J. Wade, both of Littleton, Colo., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 28, 1979, Ser. No. 79,696
Int. Cl.[3] C12M *1/34*
U.S. Cl. 435—291 11 Claims



1. A micro-organism culture bottle comprising:

a main body portion having five substantially rectangular surfaces and an open end,

a base portion having a substantially rectangular planar surface, said base portion being dimensioned to fit and close said open end of said main body portion,

said main body portion having a neck extending outwardly from the front face thereof opposite said open end, said neck being positioned asymmetrically positioned relative to said front surface, being located entirely within the lower half of said front surface;

said base portion having recess form therein near one end of said base portion, and

a pair of electrode rods sealed through said base portion and having an external tip extending into but not beyond said recess,

said base portion being bonded into sealing relation to said open end of said main body portion with said electrode rods extending into said main body portion spaced from and parallel to each other and the adjacent walls of said main body portion,

said neck and said electrodes being positioned to be below the liquid content of the bottle when said bottle is sealed and prepared for operation.

4,267,277

METHOD OF PRODUCING UREA-FORMALDEHYDE RESIN AND FOAM HAVING REDUCED FORMALDEHYDE EMISSION

Heinz L. Korf, Montreal, Canada, assignor to Rapco Foam, Inc., New York, N.Y.

Filed Jan. 7, 1980, Ser. No. 110,083
Int. Cl.³ C08J 9/30
U.S. Cl. 521—103 2 Claims

1. A method of producing a cellular foam having reduced aldehyde vapor emission during use thereof, comprising:

dispensing a foaming gas into an aqueous resin solution of a condensation product of urea and formaldehyde, the aqueous resin containing an aqueous surfactant foaming agent, an acid curing catalyst and a sufficient amount of an alkali or alkaline earth metal borohydride to reduce any free formaldehyde emitted from the foam.

4,267,278

ABS MOULDING COMPOUNDS HAVING IMPROVED SURFACE

Christian Lindner, Cologne; Bernhard Arnold; Dieter Kuhlmann, both of Pulheim; Friedrich Kowitz, Dormagen, and Karl-Heinz Ott, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 17, 1980, Ser. No. 141,203
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1979, 2916136
Int. Cl.³ C08K 5/53
U.S. Cl. 525—2 5 Claims

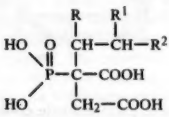
1. A thermoplastic molding composition comprising

(A) from 99.99 to 94% by weight of a composition comprising

(a) from 5 to 70% by weight of at least one rubber based graft polymer and

(b) from 95 to 30% by weight of at least one thermoplastic resin and

(B) from 0.01 to 6.0% by weight of at least one compound of the formula



wherein R is hydrogen, C_1–C_4 alkyl or carboxyl; R^1 is hydrogen or methyl and R^2 is carboxyl.

4,267,279

POLYESTER COMPOSITION STABILIZED AGAINST GEL-TIME DRIFT WITH AMINE SALT AND METHOD FOR MAKING SAME

Hilda Howell, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Jul. 27, 1979, Ser. No. 61,379
Int. Cl.³ C08L 67/06
U.S. Cl. 525—17 80 Claims

1. A curable promoted polyester resin system comprising unsaturated polyester and ethylenically unsaturated monomer and one or more additive components for altering a physical or chemical property of the resin system, wherein one of said additive components is a salt-like reaction product of an amine and an aromatic dicarboxylic acid.

4,267,280

CONTROLLED RELEASE PESTICIDES AND METHOD OF PREPARATION

Charles L. McCormick, 2308 Clayton Pl., Hattiesburg, Miss. 39401

Continuation-in-part of Ser. No. 766,522, Feb. 7, 1977, abandoned, and a continuation-in-part of Ser. No. 929,749, Jul. 31, 1978, abandoned. This application Jul. 20, 1979, Ser. No. 59,169
Int. Cl.³ C08G 18/04, 18/64
U.S. Cl. 525—56 10 Claims

1. A pesticide polymer, which has a macromolecular backbone with pendant pesticidal groups chemically linked thereto by linkages which are broken under environmental conditions of use to controllably release an effective amount of active pesticide, is prepared by reacting a pesticide having a replaceable hydrogen with a multifunctional organic isocyanate to form a pesticide-isocyanate adduct and then reacting the adduct with a polymer having pendant groups containing a replaceable hydrogen, to form linkages which are cleaved under enviromental conditions of use to controllably release an effective amount of pesticide.

4,267,281

CONTROLLED RELEASE PESTICIDES

Charles L. McCormick, 2308 Clayton Pl., Hattiesburg, Miss. 39401

Continuation-in-part of Ser. No. 766,522, Feb. 7, 1977, abandoned, and Ser. No. 820,956, Aug. 1, 1977, abandoned. This application Jul. 20, 1979, Ser. No. 59,570
The portion of the term of this patent subsequent to May 12, 1998, has been disclaimed.
Int. Cl.³ C08F 8/32
U.S. Cl. 525—61 5 Claims

1. A pesticide-polymer having a macromolecular backbone with pendant pesticidal groups chemically linked thereto by linkages which are broken under environmental conditions of use to controllably release an effective amount of active pesticide, which pesticide-polymer is prepared by reacting a polymer having pendant hydroxy groups, said polymer being selected from polyvinyl alcohol and polyvinylalcohol copolymers, with a pesticide derivative having an —NCO group, said pesticide derivative having been prepared from a pesticide having an $—NH_2$ group.

4,267,282

MINIMIZING FEED PROBLEMS AND REDUCING RESIDUAL ACRYLONITRILE MONOMER IN PROCESSING NITRILE POLYMERS

Edward F. Tokas, West Hatfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Sep. 18, 1978, Ser. No. 943,566
Int. Cl.³ C08L 9/02, 55/02
U.S. Cl. 525—86 12 Claims

1. In the process of melting a blend of nitrile polymer and liquid myrcene by means of a rotating plasticizing element, the improvements which comprise having an absorptive, anti-slip agent in admixture with the blend when charging the blend to the plasticator, said anti-slip agent being employed in an amount sufficient to reduce slippage of the blend on the surface of the rotating screw and then melting the anti-slip agent along with the polymer to form a fluid melt of polymer, anti-slip agent and myrcene.

4,267,283

STYRENIC IMPACT POLYMERS

Richard O. Whitehead, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jun. 16, 1980, Ser. No. 159,712
Int. Cl.³ C08L 53/00
U.S. Cl. 525—89 12 Claims

1. A graft copolymer composition having improved toughness consisting essentially of:

(a) from about 8.0 to about 16.0 parts by weight of a mixture

of an ABA block copolymer and an A'B'A' tapered block copolymer in a weight ratio of the ABA copolymer to the A'B'A' copolymer of between about 25:75 and about 75:25 where each A segment is an essentially pure polymer block of styrene having a number average molecular weight of between about 14,000 and about 18,000, the B segment is an essentially pure polymer block of butadiene having a number average molecular weight of between about 60,000 and about 80,000, the B block having a glass transition temperature of about −105° C.±5° C., the weight ratio of total A to B being between about 1:1.8 and about 1:2.7, and wherein each A' segment represents essentially polymerized styrene, the balance of the A' segment being polymerized butadiene, the B' segment represents essentially polymerized butadiene, the balance of the B' segment being polymerized styrene, the weight ratio of total A' to B' being from about 1:2.6 to about 1:3.6, the number average molecular weight of said A'B'A' block copolymers being between about 400,000 and about 660,000, and said B' block having a glass transition temperature of about −90° C.±5° C.: and

(b) from about 92.0 to about 84.0 parts by weight of monomeric styrene polymerized in the presence of said ABA and said A'B'A' copolymers.

4,267,284

TOUGH, TRANSPARENT ARTICLES FROM STYRENE POLYMERS BLENDED WITH CERTAIN BLOCK-RANDOM COPOLYMERS

Alonzo G. Kitchen, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 7, 1977, Ser. No. 757,526
Int. Cl.³ C08F *293/00*
U.S. Cl. 525—99 **12 Claims**

1. A blend comprising

20–70 weight percent based on a total weight of the blend of a styrene polymer and

30–80 weight percent based on the total weight of said blend of an impact modifier having a terminal monovinyl-substituted aromatic compound/conjugated diene random copolymer block segment and a terminal monovinyl-substituted aromatic compound homopolymer block segment, said monovinyl-substituted aromatic compound being present in said impact modifier in an amount within the range of 60 to 90 weight percent based on a total weight of said impact modifier, said monovinyl-substituted aromatic compound homopolymer block containing from 40 to 60 weight percent of a total of the monovinyl-substituted aromatic compound in said impact modifier.

4,267,285

COMPOSITES OF POLYMERIC MATERIAL AND THERMOSETTING RESINOUS FIBERS AND PARTICLES AND METHOD

Lawrence J. Broutman, 1037 Edgebrook La., Glencoe, Ill. 60022

Filed Aug. 20, 1979, Ser. No. 67,901
Int. Cl.³ C08L *23/12*
U.S. Cl. 525—145 **22 Claims**

1. A composite formed of a matrix of organic polymeric material and fibers of a cured thermosetting resinous material in an infusible insoluble stage dispersed within the matrix of organic polymeric material in which the fibers are surface treated to enhance the interbonding relationship with the polymeric material of the matrix.

4,267,286

MODIFIED POLYESTER COMPOSITIONS

Richard W. Campbell, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Jul. 3, 1979, Ser. No. 54,403
Int. Cl.³ C08L *67/02*
U.S. Cl. 525—176 **11 Claims**

1. A thermoplastic composition comprising:

(a) a polyester composition comprising:

(i) a poly(1,4-butylene terephthalate) resin;

(ii) a blend of a poly(1,4-butylene terephthalate) resin and a poly(ethylene terephthalate) resin;

(iii) a block copolyester of poly(1,4-butylene terephthalate) and an aromatic/aliphatic or aliphatic polyester;

(iv) a blend of (iii) and a poly(ethylene terephthalate) resin; or

(v) a blend of (iii) and a poly(1,4-butylene terephthalate) resin; and

(b) an impact modifier therefor comprising a combination of:

(i) a polyacrylate resin or a vinyl aromatic-diene block copolymer resin; and

(ii) a poly(1,3-butylene terephthalate) resin, in an amount of up to 60 parts per 100 parts by weight of (a) and (b) together.

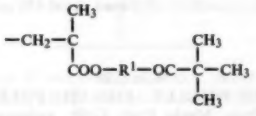
4,267,287

POLYMERS OF PIVALOYLOXYALKYL METHACRYLATES, METHOD FOR THEIR PREPARATION AND MODIFICATION

Stanislav Sevcik; Jiri Trekoval; Jan Holata, and Jiri Stamberg, all of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Division of Ser. No. 944,392, Sep. 21, 1978, Pat. No. 4,218,552, which is a division of Ser. No. 783,398, Mar. 31, 1977, Pat. No. 4,130,705, which is a continuation-in-part of Ser. No. 590,635, Jun. 26, 1975, abandoned. This application Oct. 29, 1979, Ser. No. 89,628
Claims priority, application Czechoslovakia, Jun. 27, 1974, 4540-74; Jun. 27, 1974, 4541-74; Jun. 27, 1974, 4542-74
Int. Cl.³ C08F *220/10*
U.S. Cl. 525—271 **2 Claims**

1. A method for the preparation of block copolymers formed from monomers of methacrylates and pivaloyloxyalkyl methacrylates having the general formula



where R^1 is $(CH_2)_{n1}$—O or $(CH_2CH_2—O)_{n2}$, n_1 being 2 to 10 and n_2 being 1 to 4, which comprises first initiating polymerization of a methacrylate monomer solution in the presence of butyllithium at −70° C., continuing the polymerization until the methacrylate monomer has been polymerized, then adding the pivaloyloxyalkyl methacrylate monomer and effecting complete polymerization of same.

4,267,288

EPOXY-URETHANES BASED ON COPOLYESTERS

Dean C. Burkhart, Ft. Madison, Iowa; Lee R. Harper, Media, and Eugene G. Sommerfeld, Penn Valley, both of Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 899,697, Apr. 14, 1978, abandoned. This application Jul. 23, 1979, Ser. No. 59,888
Int. Cl.³ C08L *63/00*
U.S. Cl. 525—438 **11 Claims**

1. An epoxy-urethane consisting essentially of an epoxy

endcapped and chain-extended copolyesterurethane, said epoxy-urethane being:

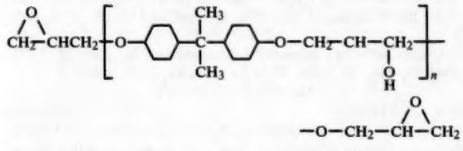
I. produced by admixing

(a) at least one copolyester, such copolyester produced by the reaction of one linear or more diols or polyether glycols with at least two different dicarboxylic acids, anhydrides of dicarboxylic acids, or methyl esters of dicarboxylic acids, about 40–80 mole percent of said dicarboxylic acids, anhydrides of dicarboxylic acids or methyl esters of dicarboxylic acids being aromatic and about 60–20 mole percent of said dicarboxylic acids, anhydrides of dicarboxylic acids, or methyl esters of dicarboxylic acids being aliphatic, and

(b) at least one organic diisocyanate, the molar ratio of isocyanate contained on the diisocyanate to hydroxyl contained on the copolyester being about 0.7/1.0 to about 1/1, at a temperature and for a time sufficient to form a copolyester-urethane;

II. reacted to the extent of 10 to 100% of the hydroxyl groups thereof with trimellitic anhydride or a dicarboxylic acid or anhydride thereof selected from the group consisting of malonic, succinic, glutaric, adipic, pimelic, suberic, azelaic, sebacic, brassylic, maleic, fumaric, dilinoleic, diphenic, phthalic, tetrachlorophthalic, isophthalic, terephthalic orthophthalic, cyclohexane dicarboxylic, p-phenylene diacetic, naphthalene dicarboxylic, dihydromuconic, beta-methyl adipic, trimethyl adipic, and ethylether-2,2'-dicarboxylic acids in an amount and for a time to form acid or anhydride endcapped copolyester-urethane with dicarboxylic acid or anhydride; and

III. endcapped and/or chain-extended to form said epoxy-urethane by reacting by heat 10–100% of the carboxyl groups of said endcapped copolyester urethane with an epoxy resin of the structure



wherein

n is an integer sufficient to provide the epoxy resin with an epoxide equivalent of at least about 450 and up to about 6000.

4,267,289

BLEND OF WHOLLY AROMATIC POLYESTERS

Michael F. Froix, Menlo Park, Calif., assignor to Celanese Corporation, New York, N.Y.

Filed Jul. 3, 1980, Ser. No. 165,534

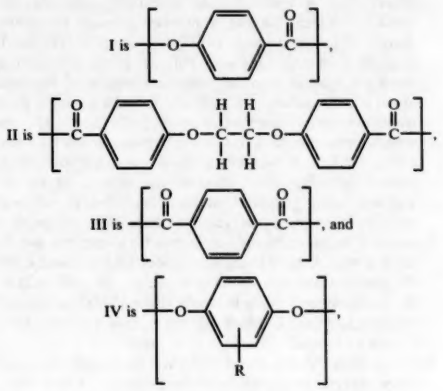
Int. Cl.[3] C08L *67/00*

U.S. Cl. 525—444 **39 Claims**

1. A polymer blend which is capable of exhibiting an anisotropic melt phase and which is capable of forming shaped articles which exhibit satisfactory mechanical properties comprising:

(a) approximately 5 to approximately 95 percent by weight, based upon the total weight of components (a) and (b), of a first melt processable wholly aromatic polyester which is capable of forming an anisotropic melt phase apart from said blend and comprises not less than approximately 10 mole percent of recurring units which include a naphthalene moiety, and

(b) approximately 5 to approximately 95 percent by weight, based upon the total weight of components (a) and (b), of a second melt processable wholly aromatic polyester which is capable of forming an anisotropic melt phase at a temperature no higher than approximately 320° C. apart from said blend and which consists essentially of the recurring moieties I, II, III, and IV wherein:



where R is methyl, chloro, bromo, or mixtures thereof, and is substituted for a hydrogen atom present upon the aromatic ring,

and wherein said second wholly aromatic polyester comprises approximately 20 to 60 mole percent of moiety I, approximately 5 to 18 mole percent of moiety II, approximately 5 to 35 mole percent of moiety III, and approximately 20 to 30 mole percent of moiety IV.

4,267,290

METHOD OF BINDING A PHENOL-BASED THERMOPLASTIC RESIN TO A CURED AND MOLDED-THERMOSET PHENOLIC PLASTIC

William F. Sherman, 2 Burtenmar Cir., Paxton, Mass. 01612

Division of Ser. No. 632,026, Nov. 14, 1975, Pat. No. 4,088,729, which is a continuation of Ser. No. 450,261, Mar. 11, 1974, abandoned, which is a division of Ser. No. 108,789, Jan. 22, 1971, Pat. No. 3,800,483. This application Apr. 4, 1978, Ser. No. 893,381

Int. Cl.[3] C08L *61/10*

U.S. Cl. 525—465 **10 Claims**

1. A new material comprised of a thermoplastic resin selected from the group consisting of phenol-containing thermoplastic resins and a cured and molded thermoset phenol-formaldehyde resin bonded to each other through cross-linking chemical bonds formed after the curing of said thermoset.

4,267,291

PROCESS FOR COATING REACTORS USING ORGANIC COMPOUND VAPOR APPLICATION

Richard A. Jones, Avon Lake, and Donald E. Witenhafer, North Olmsted, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Sep. 14, 1979, Ser. No. 75,553

Int. Cl.[3] B01J *19/00, 12/02;* **B08B** *17/00*

U.S. Cl. 526—62 **19 Claims**

1. A process for substantially eliminating the buildup of polymer on the internal surfaces of a polymerization reaction vessel for polymerizing olefinic monomer(s) which comprises, making a coating solution of a coating material which, in the form of a film, is capable of resisting polymer buildup thereon, applying said coating material to said surfaces by means of a hydrocarbon gas, said hydrocarbon gas being a saturated straight chain or branched hydrocarbon containing from 1 to 8 carbon atoms and acting as a carrier for said coating material, and thereafter conducting the polymerization of said mono-

mer(s) while in constant contact with the coated internal surfaces of said vessel.

4,267,292

ADDITION OF CHLORINE COMPOUND TO ZIEGLER POLYMERIZATION PROCESS

Kenneth C. Benton, Garfield Heights, Ohio; James F. White, Westchester, Pa.; Curtis E. Uebele, Bedford, and Raymond J. Weinert, Jr., Garfield Heights, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 26, 1979, Ser. No. 106,814
Int. Cl.[3] C08F *2/00, 2/14*
U.S. Cl. 526—79 **11 Claims**

1. A process for polymerizing an alpha-olefin comprising contacting the alpha-olefin with a Ziegler-type catalyst and subsequently adding at least one halogen containing compound selected from the group consisting of dichloroethane, dichloropropane and chlorine gas, with the proviso that said halogen compound is not added until at least 5% of said alpha-olefin has been converted to polymer.

4,267,293

METHOD FOR PRODUCING ETHYLENE POLYMERS USING TREATED CATALYSTS CONTAINING TITANIUM AND VANADIUM

Darryl R. Fahey, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 907,471, May 19, 1978, Pat. No. 4,208,304. This application Dec. 21, 1979, Ser. No. 106,345
Int. Cl.[3] C08F *4/64, 4/68*
U.S. Cl. 526—116 **11 Claims**

1. A method for producing polymers of ethylene comprising contacting ethylene monomer under conditions suitable for polymerization with a catalyst system comprising (1) an organoaluminum compound having the formula $AlR''_aX'_{3-a}$ wherein R'' is hydrogen or an alkyl or an aryl group containing from 1 to about 20 carbon atoms, X' is bromine, chlorine, iodine, or an alkoxy group containing from 1 to about 12 carbon atoms, a is an integer of from 1 to 3, with the further proviso that when X' is alkoxy, a is 2, and (2) a catalyst component that is a composition of titanium, vanadium, and halogen groups prepared by sequentially treating

(a) a mixture of titanium and vanadium compounds with

(b) an organometallic compound and

(c) titanium tetrachloride wherein said titanium compound of (a) is described by the formula $Ti(OR)_nX_{4-n}$ in which R is selected from among alkyl, cycloalkyl, aryl, and acyl groups and combinations thereof; each group can contain from 1 to about 20 carbon atoms per molecule; n designates 1, 2, 3, or 4; and X is bromine, chlorine, or iodine and said vanadium compound of (a) is VX_4 or $VO(OR')_mX_{3-m}$ in which R' is an alkyl group containing from 1 to about 20 carbon atoms, m is 0–3 and X is bromine, chlorine, or iodine.

4,267,294

1-OLEFIN POLYMERIZATION CATALYST

Wendell P. Long, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Dec. 18, 1979, Ser. No. 104,929
Int. Cl.[3] C08F *4/02, 10/06*
U.S. Cl. 526—125 **4 Claims**

1. In a process for the polymerization of 1-olefins containing a least three carbon atoms in the presence of a solid catalyst component composed of a titanium halide deposited on an anhydrous, essentially magnesium halide support and an activator component composed of a trialkylaluminum and a lower alkyl ester of an aromatic carboxylic acid, said ester containing from eight to sixteen carbon atoms, the improvement which comprises substituting a dialkylaluminum hydride for a portion of the trialkylaluminum in the activator, such substitution being made so as to provide a mole ratio of total aluminum to ester of from 3:1 to 4:1 and a mole ratio of dialkylaluminum hydride to ester of from about 0.5:1 to about 1.5:1.

4,267,295

POLYMERIC COMPOSITIONS AND HYDROGELS FORMED THEREFROM

Paul M. Gallop, Chestnut Hill, and Donald R. Korb, Boston, both of Mass., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

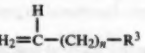
Filed Feb. 9, 1979, Ser. No. 10,992
Int. Cl.[3] C08F *220/20*
U.S. Cl. 526—264 **30 Claims**

1. A hydrophilic polymer comprising the polymerization product of:

a first monomer comprising a dihydroxyalkyl acrylate,

a second monomer comprising a substantially water insoluble alkyl acrylate or alkyl methacrylate, the mole ratio of said first monomer to said second monomer varying within the range from about 1:3 to about 20:1;

a third monomer comprising a compound selected from the group consisting of:

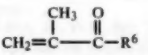


(a)

where R^3 is hydroxyl, alkoxy having 1 to 6 carbon atoms, a sulfonic acid moiety,

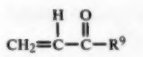
wherein R^4 and R^5 are independently selected from hydrogen and an unsubstituted or substituted alkyl group having from 1 to about 3 carbon atoms, and R^4 and R^5 may be combined to form a cyclic group, or

wherein R^4 and R^5 are as defined above, and n is an integer from 0 to about 4, except that n must be at least 1 when R^3 is hydroxyl;



(b)

where R^6 is hydroxyalkoxy having 1 to 6 carbon atoms or $-NR^7R^8$ where R^7 and R^8 are independently selected from hydrogen and lower alkyl groups having 1 to 4 carbon atoms;



(c)

where R^9 is hyroxyalkoxy having from 1 to about 6 carbon atoms; and

(d) mixtures thereof:

the total of the molar quantities of said first and second monmers to the molar quantity of said third monomer being in the range of 1:1 to 1:0.2.

4,267,296

OXYGEN-CURABLE MERCAPTO-FUNCTIONAL ORGANOSILICON-ORGANIC COMPOUND COMPOSITIONS POSSESSING RAPID SURFACE REACTION AND METHOD OF FORMING HIGHER MOLECULAR WEIGHT PRODUCTS THEREFROM

Gary R. Homan, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Dec. 3, 1979, Ser. No. 99,284
Int. Cl.[3] C08G 77/06
U.S. Cl. 528—15 **26 Claims**

1. A composition of matter, stable in the absence of oxygen, which consists essentially of a product obtained by mixing the following substantially in the absence of oxygen

(A) 100 parts by weight of an ingredient selected from the group consisting of

(1) at least one mercapto-functional copolymer having both organic compound segments and organosilicon compound segments, there being an average of at least two mercapto groups per copolymer molecule and

(2) a mixture of at least two different types of components, said components being selected from the group consisting of (a) at least one copolymer as described in (A)(1) above, (b) at least one mercapto-functional organic compound which contains an average of at least two mercapto groups per molecule and (c) at least one mercapto-functional organosilicon compound selected from the group consisting of mercapto-functional organosilanes and mercapto-functional organosiloxanes,

wherein

each organic compound segment and mercapto-functional organic compound is free of silicon atoms, aliphatic unsaturation and radicals which are reactive with mercapto groups at room temperature;

said mercapto-functional organosilanes have an average of at least two mercapto groups per molecule and are of an average formula

$$\{(HS)_vZ\}_wSiR^8_{4-w}$$

where

each Z is a divalent or polyvalent hydrocarbon radical free of aliphatic unsaturation, the valence of Z being v+1,

each R^8 is a monovalent hydrocarbon radical free of aliphatic unsaturation or OR^7,

each R^7 is an alkyl radical of 1 to 4 inclusive carbon atoms,

v has a value greater than 0,

w has a value of from 1 to 3 inclusive and the sum of v+w has a value of at least 3; and

said mercapto-functional organosiloxanes have an average of at least two mercapto-functional siloxane units per molecule selected from the group consisting of mercapto-functional siloxane units of the average unit formula

$$\{HSC_nH_{2n}\}_aR_b^9SiO_{\frac{4-a-b}{2}} \quad \text{and} \quad \begin{array}{l} HSCH-CH_2 \\ \quad\quad\quad\quad\quad\quad \diagdown \\ \quad\quad\quad\quad\quad\quad SiO_{\frac{2-c}{2}} \\ \quad\quad\quad\quad\quad\quad \diagup \\ CH_2-CH_2 \end{array} \begin{array}{l} R_c^9 \\ | \end{array},$$

any other siloxane units present having the average unit formula

$$R_d^{10}SiO_{\frac{4-d}{2}},$$

where

each R^{10} is an organic radical selected from the group consisting of R^9 and 3,3,3-trifluoropropyl radicals,

each R^9 is R^6 or OR^7,

each R^6 is an alkyl radical of 1 to 4 inclusive carbon atoms or phenyl radical,

n has a value of from 2 to 4 inclusive,

a has a value of from 1 to 2 inclusive,

b has a value of from 0 to 2 inclusive,

c has a value of from 0 to 1 inclusive,

d has a value of from 0 to 3 inclusive and the sum of a+b has a value of from 1 to 3 inclusive, and the ratio of the total R^6, HSC_nH_{2n},

$$\begin{array}{l} HSCH-CH_2 \\ \quad\quad\quad\quad\quad\quad \diagdown \\ \quad\quad\quad\quad\quad\quad\quad, \\ \quad\quad\quad\quad\quad\quad \diagup \\ CH_2-CH_2 \end{array}$$

and 3,3,3-trifluoropropyl radicals to silicon atoms in the mercapto-functional organosiloxane is in the range of 0.98/1 to 3.00/1;

(B) 0 to 200 parts by weight of at least one filler;

(C) a catalytic amount of an iron carbonyl compound selected from the group consisting of $Fe(CO)_5$, $Fe_2(CO)_9$, $Fe_3(CO)_{12}$, dicyclopentadienyldiiron tetracarbonyl, butadieneiron tricarbonyl, and cyclohexadieneiron tricarbonyl; and

(D) 0.1 to 6 parts by weight of an acid which meets the following criteria:

(1) it must be compatible with the mixed composition,

(2) it must be a proton donor, and

(3) the dissociation constant of the acid in an aqueous solution must be greater than 10^{-5}.

4,267,297

ROOM TEMPERATURE CURABLE SILICONE RESINS

Tsuneo Hanada, and Ryuzo Mikami, both of Ichihara, Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Oct. 19, 1979, Ser. No. 86,559
Int. Cl.[3] C08L 83/06; C08G 77/16, 77/18
U.S. Cl. 528—18 **9 Claims**

1. A silicone resin composition comprising

(A) 100 parts by weight of a hydroxylated organopolysiloxane of the general formula

$$\left[R_n^1SiO_{\frac{4-n-m}{2}}(OH)_m\right]_p$$

wherein R^1 is a substituted or unsubstituted monovalent hydrocarbon radical, n has an average value of from 0.80 to 1.80, p is an integer equal to or greater than 3, m has a value such that the total hydroxyl content of the organopolysiloxane is equal to or greater than 0.01 weight percent;

(B) 0.5–150 parts by weight, per 100 parts of (A), of an alkoxylated organopolysiloxane of the general formula

$$\left[R_a^2SiO_{\frac{4-a-b}{2}}(OR^3)_b\right]_q$$

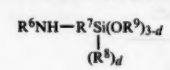
wherein R^2 has the same meaning as R^1, R^3 is a substituted or unsubstituted alkyl radical having 1–6 carbon atoms, a has an average value of from 0.40 to 1.70, g is an integer equal to or greater than 3, b has a value such that the total alkoxy content in (B) is equal to or greater than 5 weight percent;

(C) 1–150 parts by weight, per 100 parts of (A), of an alkoxysilane of the general formula

$$R_c^4Si(OR^5)_{4-c}$$

wherein R^4 has the same meaning as R^1, R^5 has the same meaning as R^3, c has a value of 0.1 to 2 and,

(D) 0.1–20 parts by weight, per 100 parts of (A) of an aminoalkylalkoxysilane of the general formula



wherein R^6 is selected from a group consisting of the hydrogen atom, alkyl groups of 1–6 carbon atoms and aminoalkyl groups, R^7 is a divalent hydrocarbon radical, R^8 and R^9 are alkyl groups of 1–6 carbon atoms, and d has a value of 0 or 1.

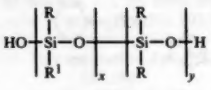
4,267,298

PROCESS FOR PREPARING M-STOPPED SILICONE FLUIDS FROM SILANOL FLUIDS

Ben A. Bluestein, Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Nov. 9, 1979, Ser. No. 92,920
Int. Cl.³ C08G *77/04*
U.S. Cl. 528—34 **18 Claims**

1. A method for producing a triorganosily-end stopped diorganopolysiloxane fluid in high yield comprising reacting a polymer of the formula,



with a chain-terminating silane of the formula,

in the absence of a base wherein R is a monovalent hydrocarbon radical of 1 to 8 carbon atoms, R^1 is a fluoroalkyl radical of 3 to 8 carbon atoms and R^2 is a monovalent hydrocarbon radical of 1 to 8 carbon atoms X is halogen where x is a positive number and y is 0 or a positive number such that the viscosity of said polymer varies from 50 to 2,000,000 centipoise at 25° C. wherein the process is carried out at a temperature in the range of 0° to 100° C. and at atmospheric pressure.

4,267,299

METHOD OF CURING ISOCYANATE-TERMINATED POLYURETHANE PREPOLYMERS FOR USE IN SOLVENTLESS SPRAY APPLICATIONS

Sixtus J. Oechsle, III, Philadelphia, Pa., assignor to Metalweld, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 944,859, Sep. 22, 1978, abandoned. This application Jun. 29, 1979, Ser. No. 53,200
Int. Cl.³ C08G *18/08*
U.S. Cl. 528—48 **20 Claims**

1. A method for the solventless spray application of a polyurethane or poly(urea)urethane coating, comprising the steps of:

(a) Delivering to a mixing chamber an isocyanate-terminated polyurethane prepolymer or quasi-prepolymer;

(b) Delivering to said mixing chamber a curing agent comprising from about 10% to about 80% by weight of one or more relatively highly reactive polyols and/or polyamines in an amount sufficient almost completely to cure the prepolymer or quasi-prepolymer and from about 90% to about 20% by weight of a reactive polyol filler having an equivalent weight in the range from about 300 to about 2,000;

(c) If necessary to effect fluid transfer and intimate admixing, heating said polymer and/or quasi-prepolymer and/or said curing agent to a temperature in the range from about 160° F. to about 200° F.;

(d) Intimately admixing said prepolymer or quasi-prepolymer and said curing agent; and

(e) Immediately after admixing, spraying said admixture through an atomizing nozzle onto a surface to produce a polyurethane or poly(urea)urethane coating.

4,267,300

EPOXY RESIN POWDER FOR APPLYING ELECTRICAL-INSULATING COATING TO WIRE

Curtis R. Guilbert, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 1, 1979, Ser. No. 80,989
Int. Cl.³ C08G *59/16, 59/42*
U.S. Cl. 528—92 **6 Claims**

1. Powder useful for applying electrical-insulating coatings to wire comprising a blend of

(a) polyglycidyl ether of bisphenol A, capped with monobasic aromatic acid in an amount providing as its ester from 1–5% by weight of the polyglycidyl ether, said capped polyglycidyl ether having
an epoxide equivalent weight of 1200–2200 and
an epoxide functionality of 1.2–1.6, and

(b) 0.9–1.5 equivalents of trimellitic anhydride per epoxide equivalent.

4,267,301

LINEAR HYDROQUINONE PHENOXY POLYMERS AND PROCESS

Eric G. Olsen, and Winston J. Jackson, Jr., both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 31, 1979, Ser. No. 108,722
Int. Cl.³ G08G *59/06*
U.S. Cl. 528—93 **27 Claims**

1. Process for the preparation of high molecular weight linear hydroquinone phenoxy polymer from hydroquinone and an epihalohydrin, said process comprising reacting hydroquinone with about 0.95 to about 1.05 equivalents of an epihalohydrin in the presence of about 1.0 to 1.1 equivalents of a base and of about one to seven parts by weight solvent for said polymer per part polymer.

4,267,302

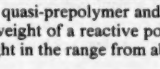
EPOXY RESIN COMPOSITION CONTAINING PERFLUOROALKYL EPOXIDE

Akira Ohmori, Ibaraki, Japan, assignor to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Sep. 25, 1979, Ser. No. 78,827
Claims priority, application Japan, Sep. 29, 1978, 53-120670
Int. Cl.³ C08G *59/20*
U.S. Cl. 528—103 **12 Claims**

1. An epoxy resin composition, which comprises:

(1) a monoepoxide having at least one perfluoroalkyl group in one molecule of the formula:



wherein R_f is a perfluoroalkyl group having 1 to 18 carbon atoms; m is 0 or an integer from 1 to 3; and n is 0 or 1, or a mixture thereof; and

(2) an epoxy resin having two or more epoxy groups in one molecule, the weight ratio of (1):(2) being 0.05:99.95 to 50:50.

4,267,303

PROCESS FOR THE PREPARATION OF POLYMERS WITH DIPHENOL CARBONATE END GROUPS

Klaus König, Leverkusen; Manfred Schreckenberg, Krefeld; Christian Lindner, Cologne; Carlhans Süling, Odenthal, and Dieter Freitag, Krefeld-Traar, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 27, 1979, Ser. No. 70,072

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1978, 2837526

Int. Cl.[3] C08G *63/62, 63/64*

U.S. Cl. 528—171 11 Claims

1. A process for the preparation of a polymer with diphenol carbonate end groups, characterized in that (a) a diol selected from polyester-diols, and polyacetal-diols with average molecular weights of $\overline{M}n$ (number average) 300–6,000, (b) a carbonic acid bis-aryl ester and (c) a diphenol are reacted together, a catalyst also being used if appropriate, at a temperature between 80° and 270° C. and under a vacuum of between 200 mg Hg and 0.1 mm Hg, n mols of diol, m mols of diphenol and p mols of carbonic acid bis-aryl ester being employed for the preparation of 1 mol of the polymer with diphenol carbonate end groups, n being a number from 1 to 20 and being chosen in each case such that the product of n and the molecular weight $\overline{M}n$ (number average), increased by 26, of the diol employed is a number between 500 and 14,500, and m being any desired number between 2 and 5 and p being at least $n+1$, but at most $(n+m)-1$.

4,267,304

AROMATIC COPOLYESTERS CAPABLE OF FORMING AN ANISOTROPIC MELT

Ronald G. Feasey, Knebworth, and Brian P. Griffin, St Albans, both of England, assignors to Imperial Chemical Industries Limited, London, England

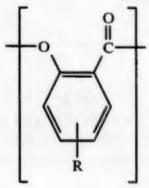
Filed Jul. 18, 1979, Ser. No. 58,442

Claims priority, application United Kingdom, Jul. 31, 1978, 31763/78

Int. Cl.[3] C08G *63/60, 63/66, 63/68*

U.S. Cl. 528—193 9 Claims

1. An aromatic polyester characterised in that it is capable of forming an anisotropic melt and contains 5 to 75 mole % of recurring units of formula:



wherein R may be hydrogen, chlorine, bromine or alkyl groups containing from 1 to 4 carbon atoms.

4,267,305

PROCESS FOR PREPARING POLYCARBONATES USING NITROGEN CROWN-CYCLIC COMPOUNDS AS CATALYSTS

Victor Mark, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Dec. 28, 1979, Ser. No. 107,724

Int. Cl.[3] C08G *63/62*

U.S. Cl. 528—199 12 Claims

1. An interfacial polymerization process for preparing high molecular weight aromatic polycarbonates which comprises reacting, under interfacial polycarbonate-forming conditions, a dihydric phenol and a carbonate precursor in the presence of a catalytic amount of a catalyst selected from the group consisting of nitrogen crown-cyclic compounds and mineral acid salts of nitrogen crown-cyclic compounds.

4,267,306

POLYESTER POLYMERS CONTAINING RESIDUES OF ANTHROQUINONE DYES

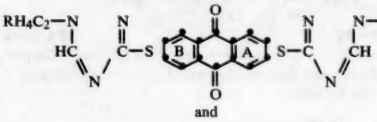
Thomas G. Davis, and Max A. Weaver, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 15, 1979, Ser. No. 12,415

Int. Cl.[3] C08G *63/68*

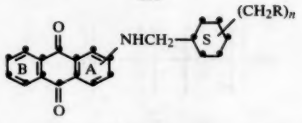
U.S. Cl. 528—226 6 Claims

1. Colored polymeric material comprising a linear thermoplastic or unsaturated cross-linkable polyester, containing a coloring amount of one or more copolyesterifide compounds of the formula



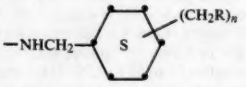
I

and



II

wherein R is —OH, —COOR[1] or —COX wherein R[1] is —H or lower alkyl, X is halogen, n is 1 or 2, either A or B of II must contain, and A or B of I may contain, at least one additional



group, each of rings A and B may be further substituted with 1–3 radicals selected from lower alkyl which may be substituted with lower alkoxy, phenyl, Cl, Br, and lower alkanoylamino; lower alkoxy which may be substituted with lower alkoxy, phenyl, Cl, Br, and lower alkanoylamino; chlorine; bromine; amino; lower alkyl amino which may be substituted with lower alkoxy, cyclohexyl, phenyl, Cl, Br, and lower alkanoylamino; aryl amino; arylthio; and aroylamino; wherein each aryl is 6–10 carbons; lower alkylsulfonyl; lower alkylthio; lower alkanoylamino; and cyclohexylamino.

4,267,307

SEALANT COMPOSITIONS

Rector P. Louthan, and Richard C. Doss, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 29, 1979, Ser. No. 98,446

Int. Cl.[3] C08G *63/68, 75/00*

U.S. Cl. 528—293 14 Claims

1. An improved sealant composition having non-tacky surfaces prepared by curing a mixture comprising:

(a) a poly(oxyalkylene)-polyester-poly(sulfide)-polythiol having more than two pendant thiol groups per molecule;

(b) a curing agent in an amount sufficient to convert at least 70% of the mercapto groups to polysulfide linkages; and

(c) the balance being non-elastomeric components selected from fillers, plasticizers, antioxidants, adhesion promoters, and the like, the improvement comprising forming said polythiol (a) by reacting at least one of a mercapto acid and a mercapto acid ester with a polyether polyol having

on average at least 2.5 primary hydroxyl end groups per molecule.

4,267,308

LAYERED ZIRCONIUM BIS(BENZENEPHOSPHONATE) INORGANIC POLYMERS

Victor E. Parziale, Irvine; Martin B. Dines, Santa Ana, and Peter M. DiGiacomo, Mission Viejo, all of Calif., assignors to Occidental Research Corporation, Irvine, Calif.

Continuation of Ser. No. 7,275, Jan. 29, 1979, abandoned. This application Jan. 4, 1980, Ser. No. 109,444

Int. Cl.³ C07F *7/00;* C08F *130/02*

U.S. Cl. 528—395 **1 Claim**

1. Layered inorganic homopolymers of zirconium bis(benzene-phosphonate).

4,267,309

PROCESS FOR PREPARING OLEFIN OXIDE POLYMERIZATION CATALYSTS

George L. Goeke, Kendall Park, and Frederick J. Karol, Belle Mead, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 928,974, Jul. 28, 1978, Pat. No. 4,193,892, which is a continuation-in-part of Ser. No. 902,566, May 8, 1978, abandoned, which is a continuation of Ser. No. 741,013, Nov. 11, 1976, abandoned. This application Jan. 31, 1980, Ser. No. 117,294

Int. Cl.³ C08G *65/10*

U.S. Cl. 528—413 **3 Claims**

1. In a process for the polymerization of olefin oxides, the improvement comprising carrying out the process in the presence of a catalytically active amount of the catalyst prepared by a process which comprises:

(i) admixing calcium, ammonia, an alkylene oxide modifier and an organic nitrile modifier, the alkylene oxide consisting of carbon, hydrogen, and oxirane oxygen atoms and the organic nitrile consisting of carbon, nitrogen, and hydrogen atoms, at least one hydrogen atom being acidic, to form a slurry of modified calcium hexamine in ammonia;

(ii) evaporating ammonia to provide a solid residue; and

(iii) aging the solid residue at a temperature in the range of about 150° C. to about 225° C.

4,267,310

PROCESS FOR PRODUCING SPHERICAL PARTICLES OF CRYSTALLINE POLYMERS

Leo M. Landoll, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Dec. 26, 1979, Ser. No. 107,472

Int. Cl.³ C08J *3/12, 3/20, 3/08*

U.S. Cl. 260—40 R **15 Claims**

1. A process for producing spherical particles having diameters ranging from about 1 to about 300 microns of polyester or polyamide crystalline, normally solid condensation-type polymers having a melt viscosity of at least 2000 poises at 20° C. above the crystalline melting point of the polymer and having a degree of crystallinity above 20%, which process comprises agitating under conditions of shear a fluid mixture of said polymer in an aprotic liquid which is a non-solvent for said polymer and which contains dissolved or dispersed therein from 0.1 to 20%, based on the weight of said polymer of a water-insoluble block or graft copolymer having a number average molecular weight above about 2000 and having at least one polymeric component which is soluble in the aprotic liquid and at least one other polymeric component of a different type which is insoluble in the aprotic liquid and associates with the condensation-type polymer, at a temperature above the crystalline melting point of the condensation-type polymer until a dispersion of liquid particles having a size within the range of about 1 to 3000 microns is formed, agitating the dispersion while cooling to a temperature below the crystalline melting point of the condensation-type polymer until the liquid particles solidify, and recovering the resulting particles from the aprotic liquid.

4,267,311

NOVEL METHOD FOR REMOVAL OF SODIUM CHLORIDE FROM PHOSPHAZENE RUBBER CRUMB SWOLLEN IN WATER

Robert A. Elefritz, Jr., Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Feb. 22, 1977, Ser. No. 770,888

Int. Cl.³ C08G *73/00;* C08J *3/00*

U.S. Cl. 528—499 **5 Claims**

1. A process for the removal of alkali metal halide from phosphazene rubber crumb resulting from the precipitation from solution of the reaction product formed by reacting a polydihalophosphazene of the formula $(NPHal_2)_n$ in which Hal represents a halogen and n is between about 20 and 50,000, with at least one compound having the formula QOR wherein Q represents an alkali metal and R represents an organic substituent whereby a mixture of QHal and $[NP(OR)_2]_n$ containing 25% by weight or more of said alkali metal halide is produced which method comprises the steps of (1) swelling said crumb by immersing the said crumb in hot water, to dissolve a substantial portion of the alkali metal halide present in said crumb, (2) withdrawing said swollen crumb from said hot water, and (3) squeezing said swollen crumb sufficiently to express a substantial amount of the resulting alkali metal halide solution associated therewith from said crumb and recovering the resulting phosphazene rubber crumb with a greatly diminished alkali halide content.

4,267,312

ANTHRACYCLINE DERIVATIVES AND PROCESS FOR PREPARING THE SAME

Toshikazu Oki, Yokohama; Akihiro Yoshimoto, Fujisawa; Taiji Inui, Chigasaki; Tomio Takeuchi, and Hamao Umezawa, both of Tokyo, all of Japan, assignors to Sanraku-Ocean Co., Ltd., Tokyo, Japan

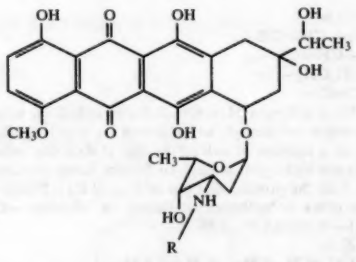
Filed Sep. 12, 1979, Ser. No. 75,302

Claims priority, application Japan, Sep. 20, 1978, 53-115507

Int. Cl.³ A61K *31/71;* C07H *15/24*

U.S. Cl. 536—17 A **3 Claims**

1. An anthracycline glycoside of the general formula (I)



(I)

wherein R represents a hydrogen atom or a formyl group (—CHO)

or a non-toxic acid addition salt thereof.

4,267,313

SACCHARIDE DERIVATIVE HAVING UREIDO GROUP

Takanori Sannan, Tokyo, and Shojiro Horiguchi, Hoya, both of Japan, assignors to Dainichiseika Color & Chemicals Mfg. Co. Ltd., Tokyo, Japan

Filed Jan. 2, 1980, Ser. No. 109,031
Claims priority, application Japan, Feb. 16, 1979, 54-16217
Int. Cl.[3] C07H *5/06*
U.S. Cl. 536—18 2 Claims

1. A macromolecular polysaccharide derived from chitin, having a ureido group, which has 100 to 1% of N-carbamoyl-D-glucosamine unit 0 to 90% of D-glucosamine unit, and 0 to 70% of N-acetyl-D-glucosamine unit.

4,267,314

PROCESS FOR THE PREPARATION OF LACTOSYLUREA, ITS PURIFICATION AND ITS CONVERSION TO THE CORRESPONDING N-HYDROXYMETHYLATED DERIVATIVE

Jean-Pierre Sachetto, St-Julien-en-Genevois; Alain Regnault, Par Ornex, both of France; Sergio Cuccolo, Geneva, Switzerland; Herve Tournier, Valleiry, France, and Jean-Michel Armanet, Onex, Switzerland, assignors to Battelle Memorial Institute, Carouge, Switzerland

Filed Feb. 12, 1979, Ser. No. 11,133
Claims priority, application Switzerland, Feb. 14, 1978, 1585/78
Int. Cl.[3] C07H *5/00*
U.S. Cl. 536—53 9 Claims

1. A process for the preparation of lactosylurea suitable for supplementing nitrogen to reminants that comprises condensing lactose and urea in the presence of water and an acid catalyst at a temperature between 70 and 110° C. with a minimum quantity of water although sufficient to keep the reaction mixture fluid enough to be agitated but also stiff enough to be spread on a horizontal flat surface without collapsing.

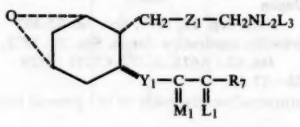
4,267,315

2-DECARBOXY-2-AMINOMETHYL-11A-METHANO-TXA$_2$ COMPOUNDS

Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 35,143, May 1, 1979, Pat. No. 4,218,378. This application Jan. 28, 1980, Ser. No. 116,079
Int. Cl.[3] C09B *23/00, 23/16;* C07D *301/00*
U.S. Cl. 542—400 3 Claims

1. A thromboxane analog of formula IV



wherein Y_1 is
(1) trans—CH=CH—,
(2) cis—CH=CH—,
(3) —CH_2CH_2—, or
(4) —C≡C—,
wherein M_1 is α-R_5:β-OH, α-OH:β-R_5, or α-H:β-H, wherein R_5 is hydrogen or methyl, and wherein L_1 is α-R_3:β-R_4, α-R_4:β-R_3, or a mixture of α-R_3:β-R_4 and β-R_3:α-R_4, wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro, or wherein —C(M_1)—C(L_1)— is trans-CH=CH—;
wherein Z_1 is
(1) cis-CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—,
(3) cis—CH_2—CH=CH—$(CH_2)_g$—CH_2—,
(4) —$(CH_2)_3$—$(CH_2)_g$—CH_2—,
(5) —$(CH_2)_3$—$(CH_2)_g$—CF_2—,
(6) —CH_2—O—CH_2—$(CH_2)_g$—CH_2—,
(7) —$(CH_2)_2$—O—$(CH_2)_g$—CH_2—,
(8) trans—CH_2—$(CH_2)_g$—CH_2—CH=CH—,
(9) —(m(Ph)—O—$(CH_2)_g$—, or
(10) —(m-Ph)—CH_2—$(CH_2)_g$—,
wherein g is one, 2, or 3, and —(m-Ph)— is meta-phenylene;
wherein R_7 is
(1) —$(CH_2)_m$—CH_3, wherein m is an integer from one to 5, inclusive;
(2) phenoxy;
(3) phenoxy substituted by one, two or three chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two substituents are other than alkyl;
(4) phenyl;
(5) phenyl substituted by one, two or three chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two substituents are other than alkyl;
(6) phenylmethyl, phenylethyl, or phenylpropyl; or
(7) phenylmethyl, phenylethyl, or phenylpropyl substituted by one, two or three chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms inclusive, or alkoxy of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two substituents are other than alkyl; with the proviso that R_7 is phenoxy or substituted phenoxy, only when R_3 and R_4 are hydrogen or methyl, being the same or different; and
wherein L_2 and L_3 are hydrogen or alkyl of one to 4 carbon atoms, inclusive, being the same or different, or a pharmacologically acceptable acid addition salt thereof.

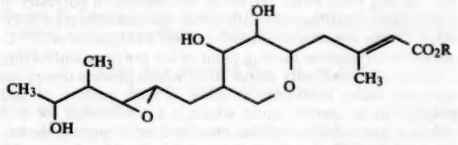
4,267,316

ANTIBACTERIAL COMPOUNDS

Kong Luk, Cranleigh; John P. Clayton, Horsham, and Norman H. Rogers, Rudgwick, all of England, assignors to Beecham Group Limited, England

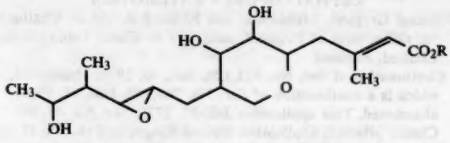
Division of Ser. No. 872,806, Jan. 27, 1978, which is a division of Ser. No. 803,466, Jun. 6, 1977, Pat. No. 4,102,901.
Filed Jun. 14, 1979, Ser. No. 48,506
Claims priority, application United Kingdom, Jun. 15, 1976, 24712/76; Sep. 29, 1976, 40472/76; Mar. 1, 1977, 8647/77
Int. Cl.[3] C07D *213/55, 215/32*
U.S. Cl. 542—427 6 Claims

1. A compound of the formula:



wherein
R is a heterocyclic ring system comprising oxygen, nitrogen or sulfur as the hetero atom and containing six ring members in the hetero ring, said system being a monocyclic or a fused benzo bicyclic system and being unsubstituted or substituted with a member selected from the group consisting of alkyl of 1 to 6 carbon atoms, carbalkoxy of 1 to 6 carbon atoms in the alkoxy group, phenyl and oxo.

2. A compound of the formula:



wherein

R is 2-oxo-4H-chromen-4-yl, 2-oxo-4-methyl-2H-chromen-7-yl, 2-methyl-4-xo-4H-chromen-7-yl, 2-phenyl-4-oxo-4H-chromen-7-yl, 2-oxo-4-carbethoxy-2H-chomen-7-yl, 2-carbethoxy-4-oxo-4H-chromen-7-yl, quinol-8-yl, 2-pyridyl, 3-pyridyl, or 4-pyridyl.

4,267,317
PROCESS FOR PRODUCING PHENOXYALKENE DERIVATIVE

Wataro Koike; Tadashi Sasuga, both of Shizuoka, and Chihiro Yazawa, Yokohama, all of Japan, assignors to Ihara Chemical Industry Co., Ltd., Tokyo, Japan

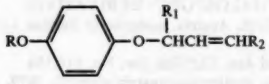
Filed Oct. 12, 1979, Ser. No. 84,161

Claims priority, application Japan, Nov. 14, 1978, 53-140284; Feb. 22, 1979, 54-19099

Int. Cl.³ C07C *69/76, 69/767, 59/48*

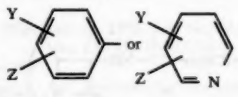
U.S. Cl. 542—416 **4 Claims**

1. A process for produding a phenoxyalkene derivative having the formula

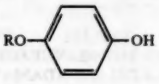


(III)

wherein R represents a hydrogen atom,

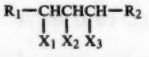


and Y and Z are the same or different and respectively represent a hydrogen atom, trifluoromethyl group, a halogen atom, a lower alkyl group, nitro group or cyano group; R_1 represents a hydrogen atom or a lower alkyl group and R_2 represents carboxyl, hydroxymethyl, allyloxycarbonyl, a lower alkoxycarbonyl, a lower haloalkoxycarbonyl, a S-lower alkylthiocarboxyl, carbamoyl, a N-lower alkylcarbamoyl or a N-phenylcarbamoyl group which comprises reacting a phenol compound having the formula



(I)

with a dihalogen compound at a molar ratio of 1.0 to 1.5 based on the phenol, having the formula



(II)

wherein R, R_1 and R_2 are defined above and X_1 represents a halogen atom and X_2 and X_3 are different and respectively represent a hydrogen atom or a halogen atom, by a simultaneous reaction of an etherification and an unsaturated double bond formation, in the presence of a dehydrogenhalide agent at a molar ratio of 1 to 3 based on the phenol, and a polar solvent or a combination of a non-polar solvent and a quaternary ammonium salt or a quaternary phosphonium salt, at a molar ratio of 0.005 to 0.05 based on the phenol, at a temperature between 30° to 150° C.

4,267,318
1-(DIARYLMETHYL)-4-PIPERIDINAMINE AND DERIVATIVES THEREOF

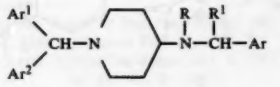
Fred M. Hershenson, Morton Grove, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed Sep. 12, 1979, Ser. No. 74,641

Int. Cl.³ C09B *55/00;* **C07D** *211/56*

U.S. Cl. 542—422 **20 Claims**

1. A compound of the formula



or a non-toxic pharmacologically acceptable acid addition salt thereof; wherein Ar^1 and Ar^2 independently are phenyl, phenyl substituted with up to five halogens, alkyl radicals of 1 to 7 carbon atoms or alkoxy radicals of 1 to 7 carbon atoms, 3,4-(methylenedioxy)phenyl or pyridyl optionally substituted with up to four alkyl radicals of 1 to 7 carbon atoms; wherein Ar is an alkoxy radical of 1 to 7 carbon atoms, or pyridyl optionally substituted with up to four alkyl radicals of 1 to 7 carbon atoms; and R and R^1 are each hydrogen or together form a double bond between the nitrogen and carbon atoms to which they are attached.

4,267,319
COLORED POLYMERIC COMPOUNDS

Hans-Juergen Degen, Lorsch, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

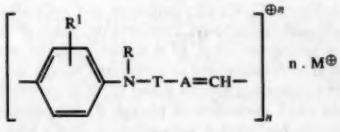
Filed Nov. 30, 1979, Ser. No. 98,775

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1978, 2852919

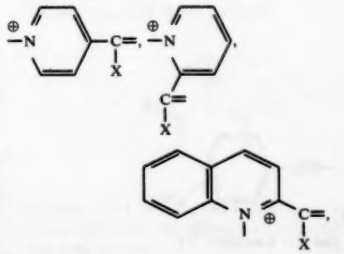
Int. Cl.³ C07D *401/06, 401/14, 403/06*

U.S. Cl. 542—434 **9 Claims**

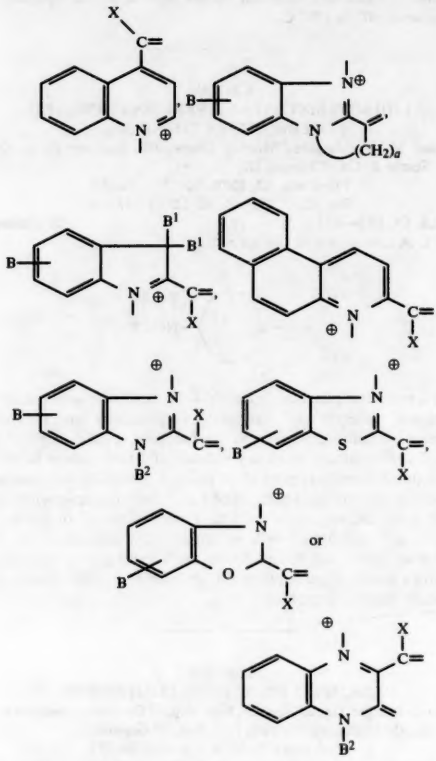
1. A colored polymeric compound of the formula:



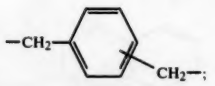
wherein A is a radical of the formula:



-continued



wherein a is 2, 3, or 4, B is hydrogen, unsubstituted or substituted C_1–C_4-alkyl, unsubstituted or substituted benzyl, C_1–C_4-alkoxy, halogen, C_1–C_4-alkylamino or di-C_1–C_4-alkylamino, nitro, C_1–C_4-alkoxycarbonyl, carbamyl or cyano, B^1 is unsubstituted or substituted alkyl, B^2 is unsubstituted or substituted C_1–C_4-alkyl or unsubstituted or substituted benzyl and X is the same as the radicals of groups B and B^1; R is unsubstituted or substituted alkyl, cycloalkyl or phenyl; R^1 is hydrogen, chlorine, bromine, hydroxyl, C_1–C_4-alkyl or C_1–C_4 alkoxy; T is alkylene which is unsubstituted or substituted by halogen, C_1–C_4 alkoxy or hydroxyl, or is a radical of the formula:



$M^{\oplus}$ is an amion and n is a number >1.

4,267,320

CEPHALOSPORIN ANTIBIOTICS

Michael Gregson, Middlesex, and Richard B. Sykes, Chalfont St. Giles, both of England, assignors to Glaxo Laboratories Limited, England

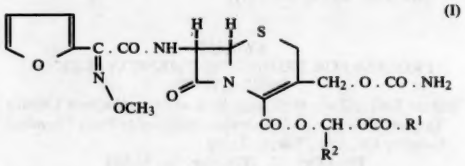
Continuation of Ser. No. 921,120, Jun. 30, 1978, abandoned, which is a continuation of Ser. No. 768,720, Feb. 15, 1977, abandoned. This application Jul. 27, 1979, Ser. No. 61,260

Claims priority, application United Kingdom, Feb. 16, 1976, 6009/76; Jun. 30, 1976, 27301/76; Jun. 30, 1976, 27302/76

Int. Cl.³ C07D *501/34*

U.S. Cl. 544—22 **11 Claims**

1. A cephalosporin antibiotic of the sym form having a formula



(I)

(wherein R^1 is a primary or secondary alkyl group containing 1 to 4 carbon atoms and R^2 is a primary or secondary alkyl group containing 1 to 6 carbon atoms provided that at least one of the groups R^1 and R^2 is methyl).

4,267,321

CEPHALOSPORIN DERIVATIVES

Gerd Ascher, Wörgl, Austria, assignor to Sandoz Ltd., Basel, Switzerland

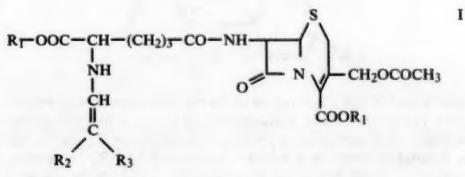
Filed Jan. 22, 1980, Ser. No. 114,154

Claims priority, application Austria, Jan. 25, 1979, 531/79

Int. Cl.³ C07D *501/20*

U.S. Cl. 544—030 **7 Claims**

1.



I

in which each R_1 independently represents hydrogen or an ester protecting group,

and R_2 and R_3, each independently represent hydrogen, nitro, cyano or lower alkoxy carbonyl, or and alkali metal salt provided at least one R_1 represents hydrogen.

4,267,322

PROCESS FOR THE MANUFACTURE OF 7-NITRO-1,3,5-TRIAZA-ADAMANTANE

Hartmut Wiezer, Gersthofen, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 16, 1979, Ser. No. 57,566

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1978, 2831632

Int. Cl.³ C07D *487/18*

U.S. Cl. 544—180 **4 Claims**

1. In a process for the manufacture of 7-nitro-1,3,5-triaza-adamantane by reaction of hexamethylene tetramine with nitromethane in an organic solvent at elevated temperature in the presence of an acid catalyst, the improvement which comprises using as solvent an aliphatic alcohol having from 1 to 4 carbon atoms and a water content not exceeding 4 weight %,

or an anhydrous aliphatic monocarboxylic acid having from 1 to 3 carbon atoms, employing the catalyst in an amount at least equimolar to that of the hexamethylene tetramine, and carrying out the reaction at 40° to 180° C.

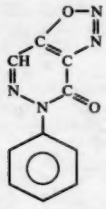
4,267,323

HETEROCYCLIC CHEMICAL COMPOUND 6-PHENYL-[1,2,3]-OXADIAZOLO-(4,5 D)-PYRIDAZINE-7(6H)-ONE AND PROCESS FOR PRODUCING IT

Raimondo Motta, Milan, Italy, assignor to Oxon Italia S.p.A., Milan, Italy

Filed Jul. 10, 1979, Ser. No. 56,400
Claims priority, application Italy, Jul. 28, 1978, 26230 A/78
Int. Cl.³ C07D *498/04, 237/02;* A61K *31/50*
U.S. Cl. 544—236 **3 Claims**

1. Heterocyclic chemical compound 6-phenyl-[1,2,3]-oxadiazolo-(4,5 d)-pyridazine-7(6H)-one having the formula:



4,267,324

PROCESS FOR PREPARING 4-AMINOPYRAZOLO-(3,4-d)PYRIMIDINE

John W. Sparks, Boston, and Henry Bader, Newton Center, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 20, 1979, Ser. No. 50,432
Int. Cl.³ C07D *487/04*
U.S. Cl. 544—262 **7 Claims**

1. A process for synthesizing 4-aminopyrazolo (3,4-d)pyrimidine which comprises the step of reacting 3-amino-4-cyanopyrazole with formamidine or a salt of formamidine in the presence of a solvent at a temperature in the range of from about 85° C. to about 125° C.

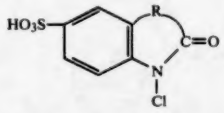
4,267,325

BLEACHING AGENTS

Robin M. Black, Porton, Near Salisbury, England, assignor to Cadbury-Schweppes Limited, London, England

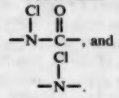
Filed Feb. 27, 1979, Ser. No. 15,705
Int. Cl.³ C07D *239/80, 241/52, 235/26*
U.S. Cl. 544—285 **8 Claims**

1. N-Chlorinated sulphonic acids of the formula:



and alkali metal salts thereof, wherein R is a group selected from the group consisting of groups of the formula:

-continued



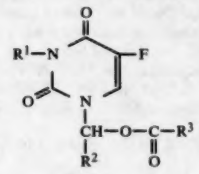
4,267,326

URACIL DERIVATIVES

Shoichiro Ozaki, Kamakura; Yoshimasa Ike, Yokohama; Katsutoshi Ishikawa, Yugawara, and Haruki Mori, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Continuation-in-part of Ser. No. 829,914, Sep. 1, 1977, abandoned. This application Feb. 26, 1979, Ser. No. 15,149
Claims priority, application Japan, Sep. 6, 1976, 51-105714
Int. Cl.³ C07D *239/54*
U.S. Cl. 544—313 **7 Claims**

1. Uracil derivatives of the general formula:



wherein:

R^1 stands for a hydrogen atom;

R^2 is a hydrogen atom and R^3 is phenyl or straight chain alkyl with 5–11 carbon atoms; or

R^2 is n-propyl and R^3 is methyl; or

R^2 is methyl and R^3 is n-butyl; or

R^2 is phenyl and R^3 is methyl.

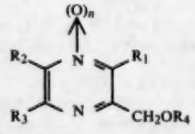
4,267,327

2-HYDROXYMETHYL-PYRAZINE DERIVATIVES AND PROCESS FOR THEIR PREPARATION

Paolo Cozzi, Milan; Osvaldo Magni, Certosa di Pavia; Leone Bertone, Milan; Romano Angelucci, Milan, and Pier P. Lovisolo, Milan, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

Filed Feb. 26, 1979, Ser. No. 15,223
Claims priority, application Italy, Mar. 23, 1978, 21520 A/78
Int. Cl.³ C07D *241/52*
U.S. Cl. 544—336 **2 Claims**

2. A compound of the formula



(I)

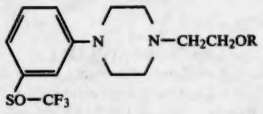
wherein n is 1; R_1, R_3 and R_4 are each hydrogen; and R_2 is C_1–C_6 alkyl, and the pharmaceutically acceptable acid addition salts thereof.

4,267,328
1-PHENYLPIPERAZINES

Henry Najer, Paris, and Philippe Manoury, Le Plessis-Robinson, both of France, assignors to Synthelabo, Paris, France

Filed Jul. 27, 1979, Ser. No. 61,245
Claims priority, application France, Aug. 1, 1978, 78 22672; Nov. 23, 1978, 78 33105; Jun. 22, 1979, 79 16030
Int. Cl.[3] C07D *295/06;* A01N *43/60*
U.S. Cl. 544—394 3 Claims

1. A compound of the formula:



wherein R is hydrogen, alkyl of less than 7 carbon atoms or —CO-alkyl wherein the alkyl group contains less than 7 carbon atoms or pharmaceutically acceptable salts thereof.

4,267,329
PROCESS FOR PREPARATION OF 2-VINYLPYRIDINE FROM ACETYLENE AND ACRYLONITRILE

Helmut Bönnemann, Essen, and Marc Samson, Hanau, both of Fed. Rep. of Germany, assignors to Studiengesellschaft Kohle GmbH, Mülheim, Fed. Rep. of Germany

Division of Ser. No. 75,458, Sep. 14, 1979. This application Jun. 2, 1980, Ser. No. 155,803
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1978, 2840460
Int. Cl.[3] C07C *13/15, 13/263;* C07D *213/22*
U.S. Cl. 546—4 3 Claims

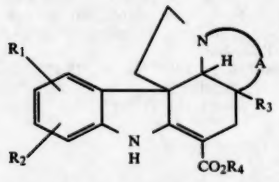
1. π-indenyl (cycloocta-1,5-diene)cobalt.
2. π-trimethylsilylcyclopentadienyl(cycloocta-1,5-diene)-cobalt.
3. π-cyclopentadiene-α,α'-bipyridylcobalt.

4,267,330
PROCESS FOR THE SYNTHESIS OF VINCADIFFORMINE AND RELATED DERIVATIVES

Martin E. Kuehne, Burlington, Vt., assignor to Omnium Chimique Societe Anonyme, Brussels, Belgium

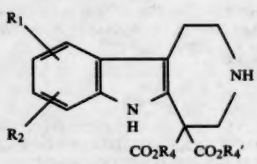
Filed Aug. 24, 1978, Ser. No. 936,454
Int. Cl.[3] C07D *471/14, 487/04*
U.S. Cl. 546—51 29 Claims

1. A process for the preparation of vincadifformine or related compound of the formula I



I

wherein each R_1 and R_2 individually is hydrogen, or hydroxy, or carbamate, or lower alkoxy, or lower alkyl having from one to 7 carbon atoms, or halo, or a combination of such substituents; R_3 and R_4 are the same or different and are hydrogen or alkyl having from one to 7 carbon atoms; A represents an alkyl chain or from 2 to 5 carbon atoms and which may be substituted by at least one alkyl, hydroxy, or hydroxy-alkyl groups of from 1 to 7 carbon atoms, characterised in condensing a dialkyl 1,2,3,4,5,6-hexahydroazepino (4,5-b) indole-5,5-dicarboxylate of the formula VI



VI

wherein R_1, R_2 and R_4 are as defined above, and R'_4 is as defined for R_4; with a straight chain or branched chain aldehyde selected from the group of halo aldehyde, arylsulfoxy aldehyde, lower alkylsulfoxy aldehyde or epoxy aldehyde and having from three to fourteen carbon atoms to produce vincadifformine or a related compound of the formula I.

3. A process for preparing dialkyl 1,2,3,4,5,6-hexahydroazepino(4,5-b)indole-5,5-dicarboxylate characterized by

reacting a N-benzyl-tetrahydro-γ-carboline (III) with t-butyl hypochlorite to obtain a halogenoindolenine directly treating said halogenoindolenine with a sodium or a thallium dialkyl malonate to provide a dialkyl 3-benzyl-1,2,3,4,5,6-hexahydroazepino(4,5-b)indole-5,5-dicarboxylate (V);

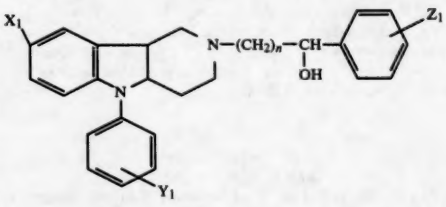
hydrogenating the compound (V) in the presence of a palladium on charcoal hydrogenation catalyst to provide a dialkyl 1,2,3,4,5,6-hexahydroazepino(4,5-b)indole-5,5-dicarboxylate (VI).

4,267,331
PROCESS FOR THE PRODUCTION OF 2-SUBSTITUTED PYRIDO[4,3-B]-INDOLES

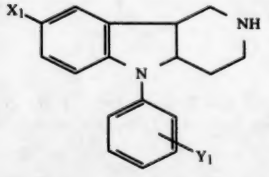
Willard M. Welch, Jr., Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 5,698, Jan. 23, 1979, which is a continuation-in-part of Ser. No. 799,392, May 23, 1977, abandoned. This application Jan. 15, 1980, Ser. No. 112,189
Int. Cl.[3] C07D *471/04*
U.S. Cl. 546—85 6 Claims

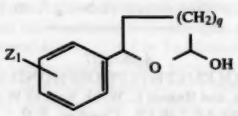
1. A process for production of a compound of the formula



wherein the hydrogen attached to the carbon atoms in the 4a and 9b positions are in a trans-relationship to each other and X_1 and Y_1 are the same or different and are each hydrogen or fluoro; Z_1 is hydrogen, fluoro or methoxy and n is 3 or 4 which comprises contacting a dextrorotatory or racemic amine of the formula



with an equimolar amount of a compound of the formula



wherein X_1, Y_1 and Z_1 are as previously defined and q is 1 or 2; in the presence of a reaction inert organic solvent and in the presence of a reducing agent, said reducing agent being an equivalent amount of (1) sodium cyanoborohydride or (2) hydrogen and a catalytic amount of noble metal catalyst; at a temperature of from about $-10°$ to 50° C.

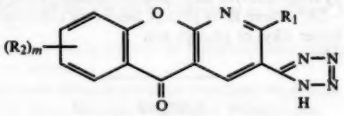
4,267,332

3-(TETRAZOL-5-YL)-1-AZAXANTHONES

Akira Nohara, Kyoto; Toshihiro Ishiguro, and Kiyoshi Ukawa, both of Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Sep. 18, 1978, Ser. No. 942,925
Claims priority, application Japan, Sep. 26, 1977, 52/115817
Int. Cl.[3] C07D *273/01*; A61K *31/395*
U.S. Cl. 546—89 **20 Claims**

1. A compound of the formula:



wherein R_1 is hydrogen, amino or hydroxyl;

R_2 is C_{1-6}alkyl, C_{1-4}alkoxy, halogen, nitro, carboxyl, hydroxyl, butadienylene attached to any two adjacent carbon atoms, amino, C_{1-3}alkylamino or bis(C_{1-3}alkyl)amino; and

m is 0, 1 or 2 or its physiologically acceptable salt.

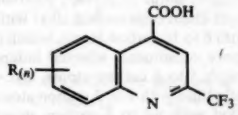
4,267,333

PREPARATION OF 2-TRIFLUOROMETHYL CINCHONINIC ACIDS

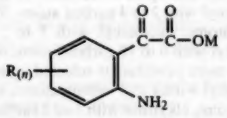
Hsiang-Wei Tsao, Lansdale, Pa., assignor to Union Carbide Agricultural Products Company, Inc., Ambler, Pa.

Filed Sep. 26, 1979, Ser. No. 78,922
Int. Cl.[3] C07D *215/50*
U.S. Cl. 546—170 **30 Claims**

1. In an improved method of preparing 2-trifluormethyl cinchoninic acids of the formula:

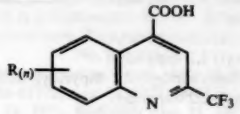


wherein R is selected from the group consisting of halogen, alkyl, aryl and alkoxy radicals, and n is an integer having a value of from 0 to 2, which comprises reacting an alkali metal 2-aminophenylglyoxylate of the formula:

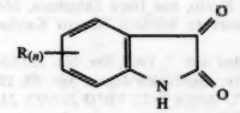


wherein M is an alkali metal, and R and n are as above defined, with 1,1,1-trifluoroacetone in the presence of an acid, the improvement comprising said acid being a weak acid, and said acid having an ionization constant between 1×10^{-2} and 1×10^{-7}, and said reaction being effected in the presence of a metal salt of a weak acid, and the pH of the reaction mixture being between 3 and 6.

16. In an improved method of preparing 2-trifluoromethyl cinchoninic acids of the formula:



wherein R is selected from the group consisting of halogen, alkyl, aryl and alkoxy radicals, and n is an integer having a value of from 0 to 2, which comprises hydrolyzing an isatin compound of the formula:



wherein R and n are as above defined in the presence of an alkali metal hydroxide, and then reacting the hydrolysis product with 1,1,1-trifluoroacetone in the presence of an acid, the improvement comprising said acid being a weak acid, and said acid having an ionization constant between 1×10^{-2} and 1×10^{-7}, and said reaction being effected in the presence of a metal salt of a weak acid, and the pH of the reaction mixture being between 3 and 6.

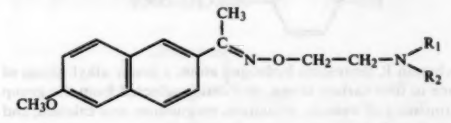
4,267,334

6-METHOXY-2-ACETHYLNAPHTHALENE OXIMES

Antonio Esteve Subirana, Barcelona, Spain, assignor to Productos Esteve Internacional S.A., Barcelona, Spain

Filed Jul. 20, 1979, Ser. No. 59,249
Claims priority, application France, Aug. 2, 1978, 78 22836
Int. Cl.[3] C07D *241/04, 207/09*; C07C *131/00*
U.S. Cl. 546—206 **11 Claims**

1. A 6-methoxy-2-acetylnaphthalene oxime derivative of the formula



in which R_1 and R_2 each represent a lower alkyl radical of from 1 to 4 carbon atoms, or form, in association with the nitrogen atom to which they are linked, a pyrrolidino or piperidino group and the acid addition salts thereof with physiologically acceptable acids.

4,267,335
SUBSTITUTED 2,2'-BIPYRIDYL COMPOUNDS AND PROCESS FOR PREPARING SAME

Charles K. McGill, Indianapolis, Ind., assignor to Reilly Tar & Chemical Corporation, Indianapolis, Ind.

Division of Ser. No. 928,396, Jul. 27, 1978. This application May 21, 1979, Ser. No. 41,291
Int. Cl.³ C07D *213/22*
U.S. Cl. 546—257 **5 Claims**

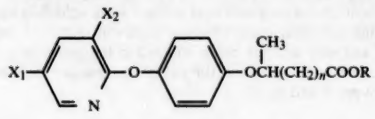
1. A substituted 2,2'-bipyridyl compound selected from the group consisting of:
4,4'-di-(5-nonyl)-2,2'-bipyridyl;
6,6'-di-(5-nonyl)-2,2'-bipyridyl;
4,4'-di-(cyclohexylmethyl)-2,2'-bipyridyl; and
5,5'-di-(5-nonyl)-2,2'-bipyridyl.

4,267,336
PROCESS FOR PRODUCING 4-(PYRIDYL-2-OXY)-PHENOXYALKANECARBOXYLIC ACID OR ITS DERIVATIVES

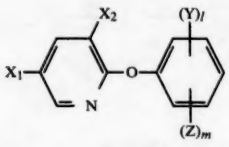
Ryuzo Nishiyama, Takatsuki; Kanichi Fujikawa, Moriyama; Rikuo Nasu, Kyoto, and Itaru Shigehara, Moriyama, all of Japan, assignors to Ishihara Sangyo Kaisha Ltd., Osaka, Japan

Filed Apr. 7, 1980, Ser. No. 137,954
Claims priority, application Japan, Apr. 19, 1979, 54/48147
Int. Cl.³ A01N *9/22*; C07D *213/57, 213/64*
U.S. Cl. 546—302 **4 Claims**

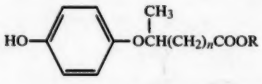
1. A process for producing 4-(pyridyl-2-oxy) phenoxyalkanecarboxylic acid or its derivative having the formula


(III)

wherein X_1, X_2, R and n are defined below, which comprises reacting 2-phenoxypyridine derivative having the formula


(I)

wherein X_1 represents a halogen atom or trifluoromethyl group; X_2 represents hydrogen or a halogen atom; Y represents methyl group; Z represents a halogen atom; l is 0 to 2 (integer); m is 0 to 5 (integer); and l+m is an integer of 5 or less, with 4-hydroxyphenoxyalkanecarboxylic acid or its derivative having the formula


(II)

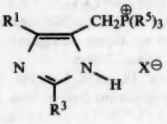
wherein R represents hydrogen atom, a lower alkyl group of one to four carbon atoms, or a cation selected from the group consisting of sodium, potassium, magnesium, and calcium; and n is 0 or 2, in the presence of an alkaline compound selected from the group consisting of alkali metals, alkali metal hydroxides and alkali metal carbonates, in an aprotic polar solvent at a reaction temperature of 50° C. to the refluxing temperature, the molar ratio of the 4-hydroxyphenoxyalkanecarboxylic acid or its derivative to the 2-phenoxypyridine derivative being from 1 to 1.5, and the molar ratio of the alkaline compound to the 2-phenoxypyridine derivative being from 1 to 2.

4,267,337
IMIDAZOLEMETHYLPHOSPHONIUM SALTS

Joseph J. Lewis, and Robert L. Webb, both of West Chester, Pa., assignors to SK&F Lab Co., Carolina, P.R.

Division of Ser. No. 915,497, Jun. 14, 1978, Pat. No. 4,215,217, which is a division of Ser. No. 771,044, Feb. 22, 1977, Pat. No. 4,119,781, which is a continuation-in-part of Ser. No. 626,948, Oct. 29, 1975, abandoned. This application Dec. 12, 1979, Ser. No. 102,693
Int. Cl.³ C07F *9/65*
U.S. Cl. 548—119 **5 Claims**

1. A compound of the formula:



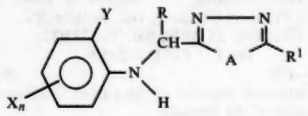
in which:
R^1 is hydrogen or lower alkyl;
R^3 is hydrogen, lower alkyl, trifluoromethyl, benzyl, amino or $—SR^4$ where R^4 is phenyl, benzyl or chlorobenzyl;
R^5 is lower alkyl or phenyl; and
X is halo.

4,267,338
N-AZOLYLALKYL-ANILINES

Jörg Stetter; Wilfried Draber; Rudolf Thomas, and Winfried Lunkenheimer, all of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 9, 1979, Ser. No. 10,784
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1978, 2805756
Int. Cl.³ A01N *43/82*; C07D *271/10*
U.S. Cl. 548—143 **34 Claims**

1. N-Azolylalkyl-aniline compound of the formula


(I)

wherein A is oxygen, sulfur or $<NR^2$, wherein R^2 represents hydrogen, straight-chain or branched alkyl with 1 to 4 carbon atoms or aryl with 6 to 10 carbon atoms, which may optionally carry one or more substituents selected independently from halogen, alkyl with 1 to 4 carbon atoms, alkoxy with 1 or 2 carbon atoms, alkylthio with 1 or 2 carbon atoms, cyano, nitro and halogenoalkyl with up to 2 carbon atoms and up to 5 identical or different halogen atoms;
R represents hydrogen or straight-chain or branched alkyl with 1 to 4 carbon atoms;
R^1 represents hydrogen, straight-chain or branched alkyl with 1 to 4 carbon atoms, halogenoalkyl with up to 3 carbon atoms and up to 5 identical or different halogen atoms, alkenyl with 2 to 4 carbon atoms, alkynyl with 2 to 4 carbon atoms, cycloalkyl with 5 to 7 carbon atoms, halogen, aryl with 6 to 10 carbon atoms, optionally carrying one or more substituents selected independently from halogen, alkyl with 1 to 4 carbon atoms, alkoxy with 1 or 2 carbon atoms, alkylthio with 1 or 2 carbon atoms, cyano, nitro and halogenoalkyl with up to 2 carbon atoms and up to 5 identical or different halogen atoms; aralkyl with 6 to

10 carbon atoms in the aryl part and 1 to 4 carbon atoms in the alkyl part, optionally carrying one or more substituents selected independently from halogen, alkyl with 1 to 4 carbon atoms, alkoxy with 1 or 2 carbon atoms, alkylthio with 1 or 2 carbon atoms, cyano, nitro and halogenoalkyl with up to 2 carbon atoms and up to 5 identical or different halogen atoms; or the grouping —OR^3, —SR^3 or —NR^2R^3, wherein R^2 represents hydrogen, straight-chain or branched alkyl with 1 to 4 carbon atoms or aryl with 6 to 10 carbon atoms, which may optionally carry one or more substituents selected independently from halogen, alkyl with 1 to 4 carbon atoms, alkoxy with 1 or 2 carbon atoms, alkylthio with 1 or 2 carbon atoms, cyano, nitro and halogenoalkyl with up to 2 carbon atoms and up to 5 identical or different halogen atoms, and R^3 represents hydrogen, straight-chain or branched alkyl with 1 to 4 carbon atms, halogenoalkyl with up to 3 carbon atoms and up to 5 identical or different halogen atoms, alkenyl with 2 to 4 carbon atoms, alkynyl with 2 to 4 carbon atoms, cycloalkyl with 5 to 7 carbon atoms and aralkyl with 6 to 10 carbon atoms in the aryl part and 1 to 4 carbon atoms in the alkyl part, the aryl part of the aralkyl radical optionally carrying one or more substituents selected independently from halogen, alkyl with 1 to 4 carbon atoms, alkoxy with 1 or 2 carbon atoms, alkylthio with 1 or 2 carbon atoms, cyano, nitro and halogenoalkyl with up to 2 carbon atoms and up to 5 identical or different halogen atoms;

X represents straight-chain or branched alkyl with 1 to 4 carbon atoms;

Y represents straight-chain or branched alkyl with 1 to 4 carbon atms, fluorine, chlorine or bromine and

n is 0, 1 or 2.

4,267,339
IMIDAZO(2,1-b)THIAZOLES

Enzo Tedeschi, Tel-Aviv, Israel, assignor to Plantex Ltd., Netanya, Israel

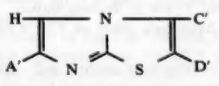
Continuation of Ser. No. 546,442, Feb. 3, 1975, abandoned. This application Dec. 28, 1976, Ser. No. 755,031

Claims priority, application Israel, Feb. 7, 1974, 44161; Jun. 26, 1974, 45127

Int. Cl.³ A61K *31/425;* **C07D** *513/04*

U.S. Cl. 548—154 **27 Claims**

1. An imidazo (2,1-b) thiazole compound having the formula:



in which;

A′ is COOR″ or CH_2OCOR''', wherein R″ is hydrogen, $H_3N^+C(CH_2OH)_3$, $H_3N^+C(CH_3)_2CH_2OH$, $HN^+(CH_2CH_2OH)_3$, $HN^+(CH_2CH_3)_3$, a pharmaceutically acceptable inorganic cation or a lower alkyl group; and R‴ is an alkyl group containing one to eight carbon atoms or parachlorophenyl;

C′ is methyl; and

D′ is hydrogen or an alkyl group containing one to eight carbon atoms;

said compound being free of the 5-carbalkoxy isomer thereof; and physiologically acceptable acid addition or quaternary salts thereof.

26. An imidazo(2,1-b)thiazole, having the formula 3-t.butyl-6-carbomethoxy-imidazo(2,1-b)-thiazole.

27. An imidazo(2,1-b)thiazole, having the formula 3-phenyl-6-carbomethoxy-imidazo(2,1-b)thiazole.

4,267,340
DISULFIDE SUBSTITUTED OXAZETIDINE DERIVATIVES

Takashi Kamiya, Suita; Yoshihisa Saito, Takarazuka; Tsutomu Teraji, Hirakata; Osamu Nakaguti, Nagaihigashi, and Teruo Oku, Shinmachi, Hitoshi Nakamura, Masahi Hashimoto, both of Tayonaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Division of Ser. No. 711,980, Aug. 5, 1976, Pat. No. 4,071,527, which is a division of Ser. No. 430,688, Jan. 4, 1974, Pat. No. 3,993,646, which is a continuation-in-part of Ser. No. 266,470, Jun. 26, 1972, abandoned. This application Nov. 16, 1977, Ser. No. 852,053

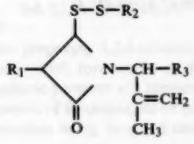
Claims priority, application Japan, Jun. 24, 1971, 46-46158; Aug. 14, 1971, 46-61776; Aug. 14, 1971, 46-61777; Aug. 18, 1971, 46-62687; Aug. 21, 1971, 46-63885; Aug. 21, 1971, 46-63886

The portion of the term of this patent subsequent to Jan. 31, 1995, has been disclaimed.

Int. Cl.³ C07D *277/20, 263/30*

U.S. Cl. 548—187 **13 Claims**

1. An oxoazetidine compound of the formula:



wherein R_1 is amino or amino substituted with a pharmaceutically acceptable carboxylic acyl protective group for the amino substituents in penicillin compounds, R_3 is a pharmaceutically acceptable carboxy, ester, acid amide, acid anhydride, acid halide, acid azide or salt of said carboxy group employed in penicillin compounds and R_2 is a pharmaceutically acceptable heterocyclic group selected from the group consisting of oxazolyl, benzoxazolyl, thiazolyl, benzothiazolyl, benzimidazolinyl, and imidazolizinyl, or said heterocyclic group substituted by lower alkyl radical, lower alkoxy radical, a halogen atom, a nitro radical, phenyl, tolyl, xylyl, chlorophenyl, nitrophenyl, benzyl, phenethyl, lower alkanoyl, benzoyl, phenylacetyl, thioacetyl, thiopropionyl, thiobenzoyl and phenyl thioacetyl.

4,267,341
PROCESS FOR PREPARING 2,3-SUBSTITUTED-1,2,-ISOTHIAZOLIUM SALT ANTIMICROBIALS

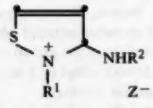
Joshua Rokach, Chomedey-Laval, Canada; Clarence S. Rooney, Worcester, and Edward J. Cragoe, Jr., Lansdale, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 854,292, Nov. 23, 1977. This application Feb. 8, 1979, Ser. No. 10,333

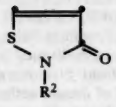
Int. Cl.³ C07D *275/02*

U.S. Cl. 548—206 **3 Claims**

1. A process for preparing compounds of the formula:



where R′ is hydrogen or an alkyl group of from 1–16 carbon atoms phenyl or benzyl and R^2 is an alkyl group of from 1–16 carbon atoms phenyl or benzyl and Z^- is a counter ion comprising reacting a compound of the formula:



where R^2 is as defined with at least a molar equivalent of phosphorus tribromide or phosphorus trichloride at a temperature of from 25° C. to 30° C. from 1 to 6 hours to obtain the intermediate compound

where X is chloro or bromo; reacting the intermediate compound with 2 molar equivalents of the amine R^1NH_2 at a temperature of from 0° C. to 25° C.

4,267,342

SPIRO-OXAZOLIDINDIONES

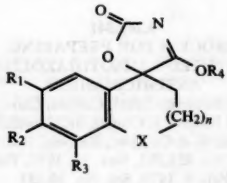
Rodney C. Schnur, Noank, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 935,199, Aug. 21, 1978, Pat. No. 4,200,642. This application Oct. 30, 1979, Ser. No. 89,686

Int. Cl.³ C07D *263/20*

U.S. Cl. 548—216 **4 Claims**

1. A compound of the formula



wherein

X is selected from the group consisting of oxygen and sulfur;

n is one or two;

R_1, R_2 and R_3 are each selected from the group consisting of hydrogen, chloro, bromo, fluoro, alkyl of 1 to 3 carbon atoms, phenyl and monosubstituted phenyl, wherein said substituent is selected from the group consisting of chloro, bromo, fluoro, hydroxyl, alkyl of 1 to 3 carbon atoms and alkoxy of 1 to 3 carbon atoms;

and R_4 is selected from the group consisting of alkyl of 1 to 4 carbon atoms, benzyl and monosubstituted benzyl, wherein said substituent is selected from the group consisting of chloro, bromo, fluoro, hydroxy, alkyl of 1 to 3 carbon atoms and alkoxy of 1 to 3 carbon atoms.

4,267,343

PROCESS FOR THE MANUFACTURE OF 2,5-BIS-(BENZOXAZOLYL)-THIOPHENE COMPOUNDS

Leonardo Guglielmetti, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

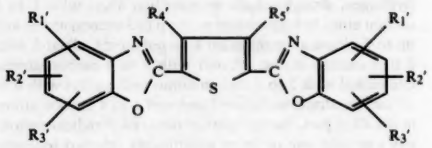
Continuation of Ser. No. 965,719, Dec. 1, 1978, abandoned, which is a continuation of Ser. No. 810,814, Jun. 28, 1977, abandoned. This application Nov. 14, 1979, Ser. No. 94,150

Claims priority, application Switzerland, May 11, 1975, 5892/77; Jul. 5, 1976, 8574/76

Int. Cl.³ C07D *409/14, 413/12*

U.S. Cl. 548—220 **10 Claims**

1. A process for the manufacture of 2,5-bis-(benzoxazolyl)-thiophene compounds of the formula



wherein

R_1' represents hydrogen, halogen, alkyl of 1 to 12 carbon atoms, haloalkyl, hydroxyalkyl, cyanoalkyl or phenylalkyl, each containing 1 to 4 carbon atoms in the alkyl moiety, alkyl of 1 to 4 carbon atoms which is substituted by a group of the formula

—COOY or —CONY$_1$Y$_2$

in which Y represents hydrogen, an alkali metal, alkaline earth metal or ammonium salt, alkyl of 1 to 18 carbon atoms, alkenyl of 2 to 4 carbon atoms, hydroxyalkyl, cyanoalkyl or phenylalkyl, each containing 1 to 4 carbon atoms in the alkyl moiety, alkoxyalkyl of altogether 2 to 8 carbon atoms, phenyl or phenyl which is substituted by alkyl of 1 to 12 carbon atoms, and each of Y_1 and Y_2 independently represents hydrogen, alkyl of 1 to 8 carbon atoms, hydroxyalkyl, cyanoalkyl or phenylalkyl each containing 1 to 4 carbon atoms in the alkyl moiety; alkenyl of 3 or 4 carbon atoms, cyclohexyl, alkoxy of 1 to 4 carbon atoms, phenyl, phenoxy, cyano, alkylsulphonyl of 1 to 4 carbon atoms, the sulpho group or an alkali metal salt thereof, or the group of the formula

—COOY or —CONY$_1$Y$_2$

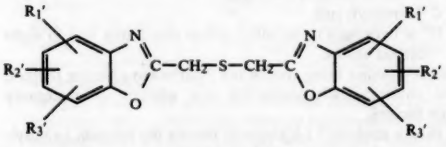
in which Y, Y_1 and Y_2 are as defined above,

R_2' represents hydrogen, alkyl of 1 to 4 carbon atoms or chlorine,

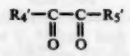
R_3' represents hydrogen or methyl, and each of

R_4' and R_5' independently represents hydrogen, alkyl of 1 to 4 carbon atoms, or together they represent the trimethylene or tetramethylene radical

which process comprises reacting in an inert solvent at a temperature of −5° C. to 100° C. in the presence of a base or an acid a sulfide of the formula



wherein R_1', R_2' and R_3' are as defined above, with a compound of the formula



wherein R_4' and R_5' are as defined above or an acetal, ketal, imine, oxime, hydrozone, sulfate, bisulfite or hydrate functional derivative thereof.

4,267,344

N-SUBSTITUTED N-CARBOXYANHYDRIDES OF α-AMINO ACIDS AND THEIR APPLICATION IN THE PREPARATION OF PEPTIDES

John B. Halstrom, Lyngby, and Karoly G. Kovacs, Farum, both of Denmark, assignors to Proteinkemisk Institut. tilknyttet Akademiet for de tekniske Videnskaber, Copenhagen, Denmark

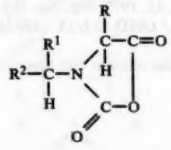
Continuation-in-part of Ser. No. 857,575, Dec. 5, 1977, abandoned, which is a continuation of Ser. No. 576,430, May 12, 1975, abandoned, which is a continuation of Ser. No. 398,805, Sep. 19, 1973, abandoned. This application Nov. 20, 1978, Ser. No. 961,944

Claims priority, application Denmark, Sep. 22, 1972, 4702/72

Int. Cl.³ 549 *26;* C07D *407/02, 412/02, 421/02*

U.S. Cl. 548—227 **5 Claims**

1. N-substituted N-carboxyanhydrides of α-amino acids, having the general formula I



I

wherein R designates hydrogen or the side-chain of an α-amino acid, any functional group or functional groups in said side-chain being optionally protected, R_1 and R_2 together with the adjacent carbon atom designates R_9-xanthyl-, R_9-thioxanthyl- or 9-selenoxanthyl group, said group being optionally substituted in positions other than 1 and 8 with probably lower alkyl, lower alkoxy, nitro, or chloro.

4,267,345

ARYLTRIFLUOROETHYLAMINES

Charles E. Malen, Fresnes; Pierre Roger, St-Cloud, and Michel Laubie, Vaucresson, all of France, assignors to Science Union et Cie, Suresnes, France

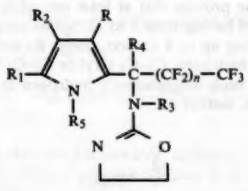
Continuation-in-part of Ser. No. 798,830, May 20, 1977, abandoned. This application Apr. 19, 1979, Ser. No. 31,386

Claims priority, application France, May 24, 1976, 76 15601

Int. Cl.³ A61K *31/42;* C07D *263/08*

U.S. Cl. 548—233 **6 Claims**

1. The oxazoline(trifluoroethyl)amines of the formula



wherein

R_1 and R_2, the same or different, are hydrogen, a lower alkoxy radical of 1 to 6 carbon atoms, inclusive, a lower alkylradical of 1 to 6 carbon atoms, inclusive, or a halogen,

R_3 is hydrogen, a methyl or an ethyl radical,

R_4 is hydrogen, a methyl, an ethyl or a cyclopropyl radical,

R is a hydrogen when R_1 and/or R_2 are different from hydrogen, or is a lower alkyl of 1 to 6 carbon atoms, inclusive, when R_1 and/or R_2 are hydrogen,

R_5 is hydrogen or a lower alkyl radical of 1 to 6 carbon atoms, inclusive, and

n is zero, 1 or 2.

4,267,346

PROCESS FOR THE PREPARATION OF 1,2,4-TRIAZOLE

Reinhard Kaiser, Cologne, and Guido Steffan, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 2, 1979, Ser. No. 612

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1978, 2802491

Int. Cl.³ C07D *249/08*

U.S. Cl. 548—262 **7 Claims**

1. A process for preparing 1,2,4-triazole which comprises contacting hydrazne with formamide in the molar ratio of 1:2.0–2.7 at atmospheric pressure at a temperature from 100° to 250° C. in the presence of ammonia, all or part of the ammonia given off in the reaction being recycled into the reaction.

4,267,347

METHOD FOR DIRECT PREPARATION FOR 1,2,4-TRIAZOLE FROM HYDRAZINE AND FORMAMIDE

Harris E. Petree, Kernersville; Joseph R. Pociask, Greensboro, both of N.C., and John T. Gupton, Casselberry, Fla., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 7, 1979, Ser. No. 92,257

Int. Cl.³ C07D *249/08*

U.S. Cl. 548—262 **8 Claims**

4. The process according to claim 1 wherein the recovery of said 1,2,4-triazole, after the vacuum distillation of the formamide, is via a melt at a temperature above 120°, its melting point, followed by cooling to the solid state.

4,267,348

FLUORINE-CONTAINING BENZIMIDAZOLES

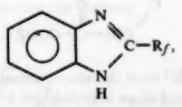
Christ Tamborski, Dayton, and John B. Christian, Yellow Springs, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 4, 1979, Ser. No. 100,301

Int. Cl.³ C07D *235/04*

U.S. Cl. 548—330 **5 Claims**

1. A fluorine-containing benzimidazole having the following structural formula:



wherein R_f is an acyclic perfluoroalkyleneether radical.

4,267,349

PROCESS FOR THE PREPARATION OF 2-SUBSTITUTED-ALKYL-1-ALKYL-NITROIMIDAZOLES

Helmut Hagen, Frankenthal, and Rolf-Dieter Kohler, Mannheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

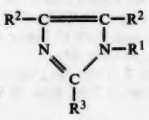
Division of Ser. No. 38,175, May 11, 1979. This application Feb. 8, 1980, Ser. No. 119,926

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1978, 2827351

Int. Cl.³ C07D *233/94, 233/93*

U.S. Cl. 548—339 **16 Claims**

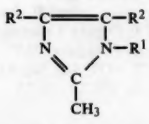
1. A process for the preparation of a 2-substituted 1-alkyl-nitroimidazole of the formula



I

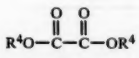
where R^1 is an aliphatic radical, one R^2 is nitro and the other R^2 is an aliphatic radical or hydrogen, R^3 is

or —CHO and X is halogen, wherein, in a first stage, a 2-methylnitroimidazole of the formula



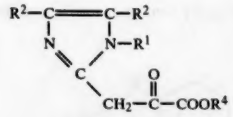
II

where R^1 and R^2 have the above meanings, is reacted with an oxalic acid diester of the formula



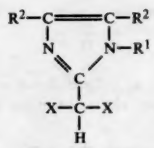
III

where the individual radicals R^4 may be identical or different and each is an aliphatic, cycloaliphatic or araliphatic radical, in the presence of a basic compound and of an organic solvent which is inert under the reaction conditions, and the resulting nitroimidazol-2-yl-pyruvic acid ester of the formula



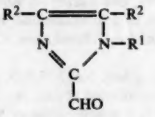
IV

where R^1, R^2 and R^4 have the above meanings, or its enolate, is reacted, in a second stage with halogen in the presence of an acid, and, if desired, the resulting 2-dihalomethylnitroimidazole of the formula



V

where R^1, R^2 and X have the above meanings, is reacted, in a third stage, with water in the presence of an acid to give a 2-formyl-nitroimidazole of the formula



VI

where R^1 and R^2 have the above meanings.

4,267,350

IMIDAZOLINIUM COMPOUNDS

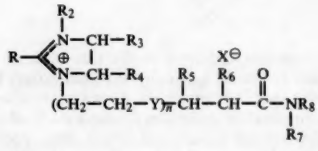
Donald A. Tomalia, and Fredric L. Buchholz, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 12, 1979, Ser. No. 103,832

Int. Cl.³ C07D *233/18, 233/22*

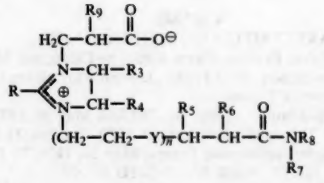
U.S. Cl. 548—354 **7 Claims**

1. A quaternary imidazolinium salt represented by the formula



(I)

or



(IA)

wherein R and R_7 are each independently aliphatic, cycloaliphatic or aralkyl hydrocarbon radicals having up to 22, carbon atoms, with the proviso that at least one of R and R_7 is an aliphatic radical having from 8 to 22 carbon atoms; R_2 is alkyl or aralkyl having up to 8 carbon atoms; R_3 and R_4 are each independently hydrogen, C_1–C_4 alkyl or C_1–C_4 hydroxyalkyl; R_6 and R_8 are each independently hydrogen or C_1–C_4 alkyl; R_5 is hydrogen, methyl or

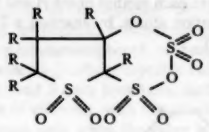
R_9 is hydrogen or methyl; Y is the divalent radical —O— or —NH—; X is an anion; and n is the integer 0, 1 or 2, with the proviso that if n is 2, then Y is —NH—.

4,267,351
SULFUR TRIOXIDE ADDUCTS OF SULFOLENES

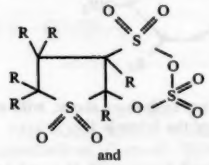
Van C. Vives, and John E. Mahan, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 944,958, Sep. 22, 1978, abandoned. This application Mar. 25, 1980, Ser. No. 133,721
Int. Cl.[3] C07D *333/00*
U.S. Cl. 549—19 5 Claims

1. Cyclic sulfonate-sulfate anhydrides represented by

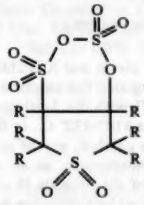


(I)



(II)

and



(III)

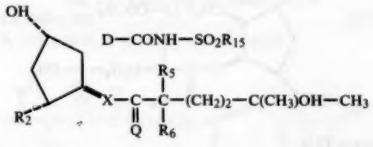
in which each R is individually selected from hydrogen and alkyl, cycloalkyl, aryl, aralkyl, and alkaryl hydrocarbon radicals.

4,267,352
19-HYDROXY-19-METHYL-6-OXO-PGF$_1$ SULFONYLAMIDES

John C. Sih, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 54,720, Jul. 5, 1979, Pat. No. 4,225,507. This application Mar. 3, 1980, Ser. No. 126,493
Int. Cl.[3] C07C *143/75, 143/79*
U.S. Cl. 560—12 1 Claim

1. A prostacyclin-type compound of the formula



wherein D is $-(CH_1)_2-CO-CH_2-L_2-$ or $-CH_2-CO-CH_2-L_3-$
wherein L_2 is
(1) $-(CH_2)_j-$, wherein j is one to 4, inclusive,
(2) $-(CH_2)_q-CF_2-$, wherein q is one, 2, or 3, or
(3) $-CH=CH-$,
wherein L_3 is
(1) $-(CH_2)_n-$, wherein n is one to 5, inclusive,
(2) $-(CH_2)_p-CF_2-$, wherein p is 2, 3, or 4, or
(3) $-CH_2-CH=CH-$;
wherein Q is oxo, α-H:β-H, α-OH:β-R_4, or α-R_4:β-OH,
wherein R_4 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,
wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl;
wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro;
wherein R_{15} is hydrogen, alkyl of one to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive, or phenyl substituted with hydroxycarbonyl or alkoxycarbonyl of one to 4 carbon atoms, inclusive; wherein X is
(1) trans-CH=CH—,
(2) cis-CH=CH—,
(3) —C≡C—, or
(4) $-CH_2CH_2-$.

4,267,353
PREPARATION OF AROMATIC URETHANES

Hans-Joachim Scholl, Cologne, and Armin Zenner, Dormagen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 22, 1979, Ser. No. 69,020
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1978, 2838754
Int. Cl.[3] C07C *125/063, 125/065, 125/07, 125/073*
U.S. Cl. 560—24 7 Claims

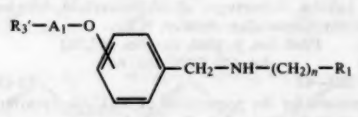
1. A process for the preparation of aromatic urethanes by the reaction of aromatic nitro compounds with aliphatic, cycloaliphatic or araliphatic alcohols and carbon monoxide in the presence of,
a. sulfur and/or selenium and/or compounds of these elements and
b. aromatic amino compounds and/or aromatic urea compounds and,
c. catalyst systems containing tertiary organic amines and/or alkali metal salts of weak acids, wherein said catalyst system additionally contains:
d. oxidizing agents selected from the group consisting of oxygen, oxidizing organic compounds containing chemically bound oxygen and oxidizing inorganic compounds of metals of the 1st, 2nd, and 5th through 8th sub-Groups of the Periodic System of Elements containing chemically bound oxygen, and
e. ammonia and/or aliphatic, araliphatic, cycloaliphatic or heterocyclic amines having at least one hydrogen atom bound to an amine nitrogen atom.

4,267,354
SUBSTITUTED AMIDES HAVING ANTIINFLAMMATORY ACTIVITY AND INTERMEDIATES

John Krapcho, Somerset, and Chester F. Turk, Kendall Park, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 33,299, Apr. 25, 1979, Pat. No. 4,216,335, which is a division of Ser. No. 897,476, Apr. 18, 1978, Pat. No. 4,166,072, which is a division of Ser. No. 773,561, Mar. 2, 1977, Pat. No. 4,098,789. This application Feb. 4, 1980, Ser. No. 118,173
Int. Cl.[3] C07C *101/30, 103/26*
U.S. Cl. 560—39 3 Claims

1. A compound having the formula



wherein R_1 is alkoxycarbonyl, amido, alkylamido or dialkylamido;

R'_3 is alkylbenzylamino, dialkylamino, 1-pyrrolidinyl, 1-piperidinyl, 4-morpholinyl, or 4-alkyl-1-piperazinyl;

A_1 is an alkylene group having 2 to 5 carbon atoms; and n is 1, 2 or 3.

4,267,355

PRODUCTION OF HERBICIDALLY-ACTIVE DERIVATIVES OF ALANINE

Richard M. Scott, Sittingbourne, and Geoffrey D. Armitage, Whitstable, both of England, assignors to Shell Oil Company, Houston, Tex.

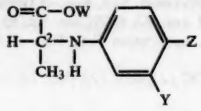
Filed Nov. 1, 1976, Ser. No. 737,313

Claims priority, application United Kingdom, Nov. 5, 1975, 45914/75

Int. Cl.³ C07C *101/08*

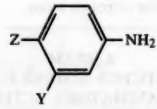
U.S. Cl. 560—43 **4 Claims**

1. A process for preparing a compound of the formula



having the R-configuration at carbon atom 2, wherein Y is hydrogen, chlorine or fluorine, Z is chlorine or fluorine, and W is hydrogen or alkyl of from one to six carbon atoms, which consists of treating a compound of the formula

having the S-configuration at carbon atom 2, wherein X is $Q—SO_2—O—$, $Q—C(O)—$ or $CV_3—CH(OH)—O—$, wherein V is chlorine, bromine or fluorine and Q has up to ten carbon atoms and is alkyl, phenyl or alkyl-substituted phenyl, with an aniline of the formula



in the presence of a base selected from alkali metal carbonates, alkali metal bicarbonates and an excess of said aniline, at a temperature within the range of 50° C. to 200° C.

4,267,356

PROCESS FOR THE PREPARATION OF N-(1'-ALKOXYCARBONYLETHYL)-2,6-DIALKYLANILINES

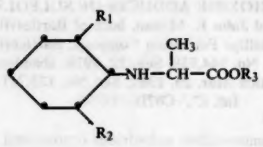
Alfred Grieder, Böckten; Klaus-Jürgen Coers, Reinach, and Peter Labuhn, Kaiseraugst, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 9, 1980, Ser. No. 157,762

Int. Cl.³ C07C *101/44*

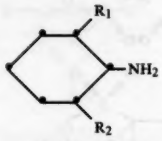
U.S. Cl. 560—43 **14 Claims**

1. A process for the preparation of N-(1'-alkoxycarbonylethyl)-2,6-dialkylanilines of the formula I



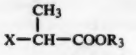
(I)

in which R_1 and R_2 are each methyl or ethyl and R_3 is an alkyl group having 1–4 carbon atoms, by reacting a 2,6-dialkylaniline of the formula II



(II)

in which R_1 and R_2 are as defined above, with a 2-halogenopropionic acid ester of the formula III



(III)

in which R_3 is as defined above and X is chlorine or bromine, which comprises carrying out the reaction of the 2,6-dialkylaniline of the formula II with the 2-halogenopropionic acid ester of the formula III at 110°–130° C., in the presence of an alkali metal iodide, as the catalyst, and of an alkali metal carbonate or alkali metal bicarbonate, as an acid acceptor, in excess 2,6-dialkylaniline of the formula II as the solvent, the water formed being removed by distillation during the reaction and the organic phase obtained after the addition of water and separation of the phases being worked up by distillation.

4,267,357

13,14-DIHYDRO-INTER-PHENYLENE-11-DEOXY-11-HYDROXYMETHYL-19-OXO-PGE$_1$ COMPOUNDS

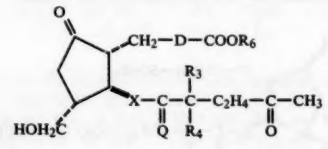
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979, Pat. No. 4,228,104. This application Mar. 20, 1980, Ser. No. 132,236

Int. Cl.³ C07C *171/00*

U.S. Cl. 560—53 **4 Claims**

1. A compound of the formula



wherein D is

(1) —(m—Ph)—$(CH_2)_2$—, or

(2) —(m—Ph)—O—CH_2—,

wherein —(m—Ph)— is inter-metal-phenylene;

wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;

wherein R_6 is

(a) hydrogen,

(b) alkyl of one to 12 carbon atoms, inclusive,

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,

(d) aralkyl of 7 to 12 carbon atoms, inclusive,

(e) phenyl,

(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p—Ph) is para-phenyl or inter-para-phenylene, wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is —CH_2CH_2—.

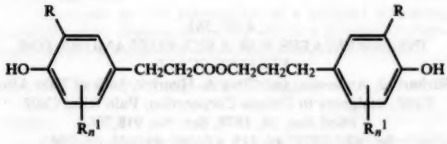
4,267,358

PHENOLIC ESTER INHIBITOR

Ingenuin Hechenbleikner, Cornwall; William P. Enlow, Falls Village, and James H. Weis, South Kent, all of Conn., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Mar. 13, 1980, Ser. No. 129,877
Int. Cl.³ C07C *69/88*
U.S. Cl. 560—75 **2 Claims**

1. A phenolic ester having the structure



where R is an alkyl or cycloalkyl group having 3–8 carbon atoms, R^1 is an alkyl group having 1–6 carbon atoms, and n is 1–2.

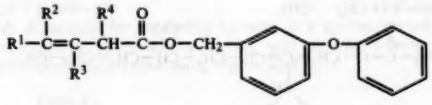
4,267,359

NOVEL CARBOXYLIC ACID ESTERS

Richard J. Anderson, and Clive A. Henrick, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Division of Ser. No. 902,624, May 4, 1978, Pat. No. 4,204,071.
This application Feb. 26, 1979, Ser. No. 15,569
Int. Cl.³ C07C *69/76*; A01N *37/10*
U.S. Cl. 560—104 **15 Claims**

1. A compound of the following formula:



wherein,
R^1 is naphthyl, phenyl or substituted phenyl in which the phenyl group is substituted at one, two or three of the ring carbon atoms with lower alkyl, lower haloalkyl, lower alkoxy or halogen;
each of R^2 and R^3 is independently selected from hydrogen, chloro, fluoro or methyl; and
R^4 is lower alkyl of 2 to 5 carbon atoms.

4,267,360

NOVEL DERIVATIVES OF HEXAFLUOROPROPENE DIMER AND PROCESS FOR PREPARING SAME

Masahiro Ozawa, Kamifukuoka; Tadaaki Komatsu, Saitama, and Kimiaki Matsuoka, Kawagoe, all of Japan, assignors to Central Glass Company, Limited, Ube, Japan

Continuation of Ser. No. 825,476, Aug. 17, 1977, abandoned.
This application Oct. 15, 1979, Ser. No. 84,854
Claims priority, application Japan, Aug. 20, 1976, 51-98747
Int. Cl.³ C07C *67/04, 69/54, 69/78*
U.S. Cl. 560—111 **6 Claims**

1. A process for preparing a mixture of compounds having the formula

in which R_f is $(CF_3)_2C{=}C(CF_2CF_3)$ in one compound of the mixture and $(CF_3)_2CH{-}CF(CF_2CF_3)$ in another compound of the mixture and R is a hydrocarbon residue of a monocarboxylic acid having the formula RCO_2H selected from the group consisting of acetic acid, acrylic acid, methacrylic acid and benzoic acid, the process comprising contacting for reaction a hexafluoropropene dimer having the formula $(CF_3)_2{=}CFCF_2CF_3$ with said monocarboxylic acid in an inert solvent in the presence of a catalyst selected from the group consisting of inorganic bases, tertiary amines and sodium, potassium, amine and ammonium salts of the monocarboxylic acid used as reactant at a temperature between −10° C. and 100° C.

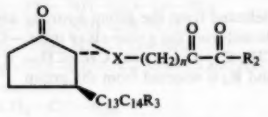
4,267,361

1-DESCARBOXY-1-KETOESTER (KETOACID) PROSTAGLANDINS

Middleton B. Floyd, Jr., Suffern, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

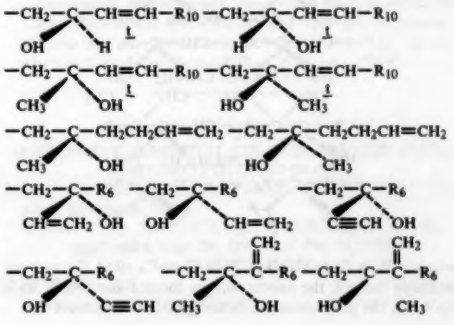
Filed Sep. 27, 1979, Ser. No. 79,652
Int. Cl.³ C07C *177/00*
U.S. Cl. 560—118 **53 Claims**

1. A compound of the formula

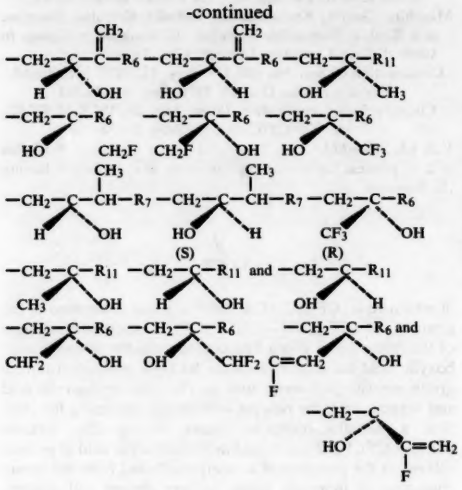


Ib

wherein R_2 is selected from the group hydroxy and C_1 to C_7 alkoxy; X is selected from the group cis or tarns —CH=CH— and —CH_2—CH_2; C_{13}—C_{14} is trans CH=CH—; n is the integer 2, 3 or 4; and R_3 is selected from the group

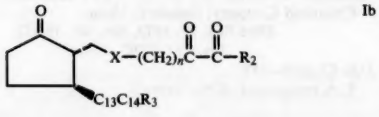


-continued



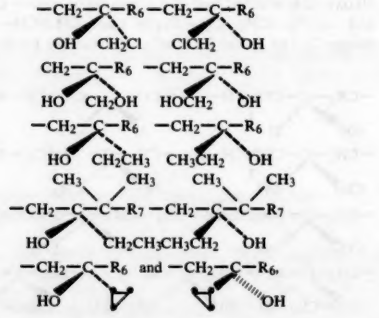
wherein R_6 is C_3 to C_5 alkyl, R_7 is C_2 to C_4 alkyl, R_{10} is C_1 to C_4 alkyl and R_{11} is C_3 to C_7 alkyl, the racemic mixtures thereof, the mirror images thereof and where R_2 is hydroxy, the pharmaceutically acceptable salts thereof.

2. A compound of the formula



Ib

wherein R_2 is selected from the group hydroxy and C_1 to C_7 alkoxy; X is selected from the group cis or trans —CH=CH— and —CH_2—CH_2; C_{13}–C_{14} is trans CH=CH—, n is the integer 2, 3 or 4; and R_3 is selected from the group



wherein R_6 is C_3 to C_5 alkyl, R_7 is C_2 to C_4 alkyl, the racemic mixtures thereof, the mirror images thereof and where R_2 is hydroxy, the pharmaceutically acceptable salts thereof.

4,267,362

PROCESS FOR THE PREPARATION OF DELTA KETO-ACIDS AND DERIVATIVES THEREOF

Peter J. N. Meyer, Munstergeleen, and Josef M. Penders, Maastricht, both of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed Aug. 17, 1979, Ser. No. 67,914

Claims priority, application Netherlands, Aug. 19, 1978, 7808605

Int. Cl.[3] **C07C** *120/00, 121/34, 121/46, 64/716*

U.S. Cl. 560—174 **14 Claims**

1. In a process for the preparation of delta-keto-acids and derivatives thereof by reaction of aliphatic or cyclo-aliphatic ketones having at least one activated alpha H-atom with an acrylic compound in the liquid phase and with the aid of a catalyst, the improvement consisting essentially in the combination of

(i) using as said ketone a member of the group consisting of acetone, methyl-ethyl ketone, diethyl ketone, methyl-propyl ketone, methyl-isopropyl ketone, cyclopentanone, cyclohexanone, 2-methyl cyclohexanone, and 4-methyl cyclohexanone;

(ii) using as said acrylic compound a member of the group consisting of acrylic acid, methacrylic acid, crotonic acid, the lower alkyl esters of these acids, the nitriles of these acids and the amides of these acids;

(iii) using as said catalyst the adduct of a cyclic secondary amine and an acrylic compound as defined in (ii) herein.

4,267,363

INTERMEDIATES FOR A SEX PHERAMONE FOR YELLOW SCALE

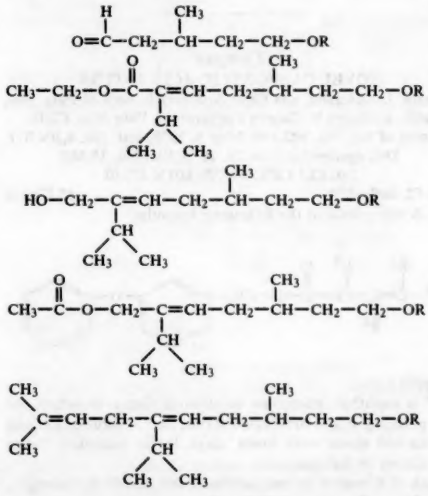
Richard J. Anderson, and Clive A. Henrick, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Filed Jun. 26, 1978, Ser. No. 918,754

Int. Cl.[3] **C07C** *43/315, 47/198, 69/145, 69/734*

U.S. Cl. 560—183 **9 Claims**

1. A compound selected from those of the following formulas (III), (IV), (V), (VI) and (VII):



wherein R is β-methoxyethoxymethyl.

4,267,364
FLUORINATED ION EXCHANGE POLYMER CONTAINING CARBOXYLIC GROUPS, PROCESS FOR MAKING SAME, AND FILM AND MEMBRANE THEREOF

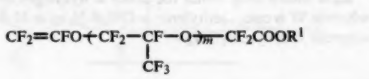
Walther G. Grot, Chadds Ford, Pa.; Charles J. Molnar, and Paul R. Resnick, both of Wilmington, Del., assignors to E. I. DuPont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 789,726, Apr. 20, 1977, and Ser. No. 789,727, Apr. 20, 1977. This application Nov. 13, 1978, Ser. No. 959,839

Int. Cl.³ C09C *69/73;* **B01D** *13/04*

U.S. Cl. 560—183 **3 Claims**

1. A compound of the formula



wherein m is 0, 1 or 2, and R^1 is lower alkyl or $M_{(1/n)}$, where M is H, alkali metal or alkaline earth metal, and n is the valence of M.

4,267,365
PROCESS FOR THE PREPARATION OF OLIGOMERIC ACRYLIC ACIDS

Kurt Findeisen, Odenthal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

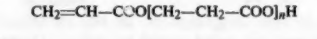
Filed Dec. 26, 1978, Ser. No. 973,342

Claims priority, application Fed. Rep. of Germany, Jan. 5, 1978, 2800357

Int. Cl.³ C07C *69/52*

U.S. Cl. 560—205 **7 Claims**

1. A process for the preparation of a product consisting essentially of an oligomeric acrylic acid or a mixture of oligomeric acrylic acids which acrylic acids have the formula



wherein

n represents a number from 1 to 6 which consists essentially of heating acrylic acid in the presence of 0.001 to 1% by weight of a polymerization inhibitor consisting essentially of molecular oxygen, nitric oxide, a phenol, a quinone, an aromatic amine, a nitro compound or diphenylpicrylhydrazyl in a reaction mixture consisting essentially of said acrylic acid and said polymerization inhibitor to a temperature of about 50° to about 200° C.

4,267,366
CYCLIC TERPENOID AMINES, THEIR PREPARATION AND USES

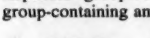
Bernard J. Kane, Atlantic Beach, and Richard A. Von Genk, Jacksonville, both of Fla., assignors to SCM Corporation, New York, N.Y.

Division of Ser. No. 860,284, Dec. 14, 1977. This application Jun. 18, 1979, Ser. No. 49,607

Int. Cl.³ C07C *69/02, 67/02, 91/02, 93/10*

U.S. Cl. 560—231 **12 Claims**

1. A process for producing an ester of a cyclized acyclic terpenoid group-containing amine, said acyclic terpenoid group-containing amine being represented by:



where T_A is a neryl group or a geranyl group; R_1 and R_2 are joined together and with N as a cyclic group which comprises first forming the cyclic terpenoid amine by maintaining an acidic aqueous solution of said acyclic terpenoid group-containing amine at a temperature of at least about 80° C. until said acyclic terpenoid group cyclizes, there being at least about 1.1 equivalents of acid per equivalent of said amine in said solution, the resulting cyclic terpenoid amine being a mixture of alpha-, beta-, and gamma-cyclogeranyl amines; recovering the resulting mixture of cyclic terpenoid amines from said solution; and then reacting said mixture of cyclic terpenoid amines with a carboxylic acid anhydride at about 70° C. to 250° C. to selectively form a beta-cyclogeranyl ester of a carboxylic acid; and recovering separately said beta-cyclogeranyl ester of a carboxylic acid and unreacted alpha-, and gamma-cyclogeranyl amines.

4,267,367
19-HYDROXY-19-METHYL-TRANS-2,3-DIDEHYDRO-PG_1 COMPOUNDS

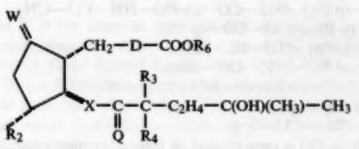
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,878, Apr. 2, 1979, abandoned. This application Mar. 24, 1980, Ser. No. 132,749

Int. Cl.³ C07C *177/00*

U.S. Cl. 562—503 **2 Claims**

1. A compound of the formula



wherein D is trans—$(CH_2)_3$—CH=CH—,

wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;

wherein R_6 is

(a) hydrogen,

(b) alkyl of one to 12 carbon atoms, inclusive,

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,

(d) aralkyl of 7 to 12 carbon atoms, inclusive,

(e) phenyl,

(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,

(g) —(p—Ph)—CO—CH_3,

(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,

(i) —(p—Ph)—NH—CO—(p—Ph),

(j) —(p—Ph)—NH—CO—CH_3,

(k) —(p—Ph)—NH—CO—NH_2,

(l) —(p—Ph)—CH=N—NH—CO—NH_2,

(m) β-naphthyl,

(n) —CH_2—CO—R_{28},

wherein (p—Ph) is para-phenyl or inter-para-phenylene, wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation;

wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl;

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein W is oxo, methylene, α-OH:β-H, or α-H:β-OH; and

wherein X is cis- or trans—CH=CH—, or —C≡C—.

4,267,368
19-HYDROXY-19-METHYL-CIS-4,5-DIDEHYDRO-13,14-DIHYDRO-PG_1 COMPOUNDS

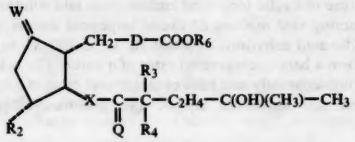
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,878, Apr. 2, 1979, abandoned. This application Mar. 24, 1980, Ser. No. 132,750

Int. Cl.³ C07C *177/00*

U.S. Cl. 562—503 **2 Claims**

1. A compound of the formula



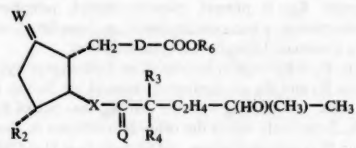
wherein D is cis—CH_2—CH=CH—CH_2—CH_2—,
wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p-Ph)—CO—CH_3,
(h) —(p-Ph)—NH—CO—(p-Ph)—NH—CO—CH_3,
(i) —(p-Ph)—NH—CO—(p-Ph),
(j) —(p-Ph)—NH—CO—CH_3,
(k) —(p-Ph)—NH—CO—NH_2,
(l) —(p-Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p-Ph) is para-phenyl or inter-para-phenylene,
wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein W is oxo, methylene, α-OH:β-H, or α-H:β-OH; and
wherein X is —CH_2CH_2—.

4,267,369
19-HYDROXY-19-METHYL-TRANS-2,3-DIDEHYDRO-13,14-DIHYDRO-PG_1 COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,878, Apr. 2, 1979, abandoned. This application Mar. 24, 1980, Ser. No. 132,751
Int. Cl.³ C07C *177/00*
U.S. Cl. 562—503 **2 Claims**

1. A compound of the formula



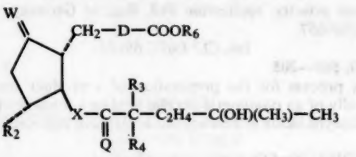
wherein D is trans-$(CH_2)_3$—CH=CH—,
wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p-Ph) is para-phenyl or inter-para-phenylene,
wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein W is oxo, methylene, α-OH:β-H, or α-H:β-OH; and
wherein X is —CH_2CH_2—.

4,267,370
19-HYDROXY-19-METHYL-INTER-OXA-PG_1 COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,878, Apr. 2, 1979, abandoned. This application Mar. 24, 1980, Ser. No. 133,197
Int. Cl.³ C07C *177/00*
U.S. Cl. 562—503 **2 Claims**

1. A compound of the formula



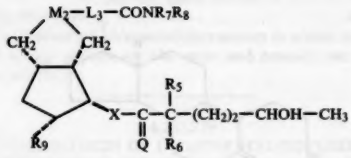
wherein D is
(1) —$(CH_2)_3$—O—CH_2—,
(2) —$(CH_2)_2$—O—$(CH_2)_2$—, or
(3) —CH_2—O—$(CH_2)_3$—,
wherein Q is α—OH:β—R_5 or α—R_5:β—OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p—Ph) is para-phenyl or inter-para-phenylene,
wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein W is oxo, methylene, α—OH:β—H, or α—H:-β—OH; and
wherein X is cis— or trans—CH=CH— or —C≡C—.

4,267,371
19-HYDROXY-6A-CARBA-PGI$_2$ AMIDES

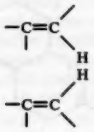
John C. Sih, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 54,811, Jul. 5, 1979, Pat. No. 4,225,508.
This application Mar. 3, 1980, Ser. No. 126,468
Int. Cl.^{3} C07C *103/19*
U.S. Cl. 564—188 1 Claim

1. A prostacyclin-type compound of the formula



wherein L_3 is
(1) $-(CH_2)_n-$, wherein n is one to 5, inclusive,
(2) $-(CH_2)_p-CF_2-$, wherein p is 2, 3, or 4, or
(3) $-CH_2-CH=CH-$;
wherein M_2 is



(1)

(2)

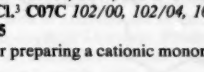
wherein Q is oxo, α-H:β-H, α-OH:β-R_4, or α-R_4:β-OH,
wherein R_4 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,
wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro;
wherein R_7 and R_8 are hydrogen, alkyl of one to 12 carbon atoms, inclusive, benzyl, or phenyl, being the same or different;
wherein R_9 is hydrogen or hydroxyl; and
wherein X is
(1) trans—CH=CH—,
(2) cis—CH=CH—,
(3) —C≡C—, or
(4) $-CH_2CH_2-$.

4,267,372
PREPARATION OF N-SUBSTITUTED ACRYLAMIDE MONOMERS HAVING CATIONIC SUBSTITUENTS

Alan S. Rothenberg, Wilton, and Michael N. Desmond, Norwalk, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

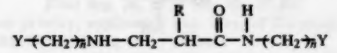
Filed Oct. 26, 1979, Ser. No. 88,738
Int. Cl.^{3} C07C *102/00, 102/04, 102/06*
U.S. Cl. 564—205 10 Claims

1. A process for preparing a cationic monomer of the general structure:

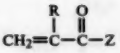


wherein R is hydrogen or methyl, n is an integer of from 2 to 6, inclusive, Y is selected from the group consisting of morpholine, pyrrolidone, piperidine and

wherein R′ and R″ are individually saturated aliphatic radicals containing from 1 to 4 carbon atoms inclusive, which process comprises reacting a compound of the general structure:



wherein R, Y and n are of the same significances previously set forth with an equal molar amount of a compound of the general structure:



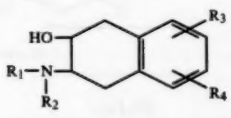
wherein R is the same as above and Z is selected from the group consisting of —OH, —OR‴ and —X wherein R‴ is a saturated aliphatic radical having one or two carbon atoms, and —X is a halogen under reaction temperatures within the range of about 160°-230° C. and either distilling off the corresponding water or alcohol or neutralizing the hydrogen halide formed.

4,267,373
5,6,7,8-TETRAHYDRONAPHTHALENE HYPOTENSIVE AGENTS

Frederic P. Hauck, Somerville; Christopher M. Cimarusti, Hamilton, both of N.J., and Joseph E. Sundeen, Yardley, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 428,466, Dec. 26, 1973, Pat. No. 4,076,843, which is a continuation-in-part of Ser. No. 268,314, Jul. 3, 1972, abandoned. This application Nov. 14, 1977, Ser. No. 851,018
Int. Cl.^{3} C07C *87/64*
U.S. Cl. 564—428 13 Claims

1. A compound having the structure



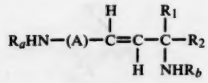
wherein R_1 is hydrogen or alkyl; R_2 is alkyl; R_3 and R_4 are each hydrogen, hydroxyl, alkoxy, or arylalkoxy, with the proviso that both R_3 and R_4 are not hydrogen and with the additional provisio that both R_3 and R_4 are not hydroxyl; and a pharmaceutically acceptable salt thereof.

4,267,374
DERIVATIVES OF AMINES AND AMINO ACIDS

Brian W. Metcalf, Strasbourg; Michel Jung, Illkirch Graffenstaden, and Charles Danzin, Strasbourg, all of France, assignors to Merrell Toraude et Compagnie, Strasbourg, France

Continuation of Ser. No. 812,115, Jul. 1, 1977, abandoned. This application Jun. 25, 1979, Ser. No. 52,035
Int. Cl.^{3} C07C *87/24, 103/28, 103/44, 125/06*
U.S. Cl. 564—509 4 Claims

1. A compound of the formula



wherein A is methylene, ethylene or ethylidene; R_1 is —C≡CH; R_2 is hydrogen; R_a is hydrogen,

alkylcarbonyl wherein the alkyl moiety has from 1 to 4 carbon atoms and is straight or branched, alkoxycarbonyl wherein the alkoxy moiety has from 1 to 4 carbon atoms and is straight or branched, or

wherein R_7 is hydrogen, a straight or branched lower alkyl group of from 1 to 4 carbon atoms, benzyl, or p-hydroxybenzyl; R_b has the same meaning as defined for R_a except R_b is not

and R_a and R_b can be the same or different; with the proviso that when R_a is

A is methylene; and pharmaceutically acceptable salts and individual isomers thereof.

4,267,375

PREPARATION OF THIOETHERS

Alfred G. Maasbol, Hamburg, Fed. Rep. of Germany, and Lothar G. Dulog, St. Martens Latem, Belgium, assignors to s.a. Texaco Belgium n.v., Brussels, Belgium

Continuation of Ser. No. 703,045, Jul. 6, 1976, abandoned. This application Sep. 25, 1978, Ser. No. 945,273

Claims priority, application United Kingdom, Nov. 19, 1975, 47582/75

Int. Cl.³ C07C *149/30*

U.S. Cl. 568—57 **3 Claims**

1. A method for the preparation of 1-phenyl-1,2-bis(phenylthio)ethane wherein thiophenol is heated at reflux temperature is benzene with zinc chloride and with an oxygenated aromatic derivative selected from the group consisting of phenyl-1-hydroxyphenethyl sulphide, phenyl-2-hydroxyphenethyl sulphide and styrene oxide for a period of time sufficient to form 1-phenyl-1,2-bis(phenylthio)ethane, and 1-phenyl-1,2-bis(-phenylthio)ethane is separated.

4,267,376

STEROID SYNTHESIS

Jiro Tsuji, Kanagawa, Japan, assignor to Takeda Chemical Industries, Ltd., Osaka, Japan

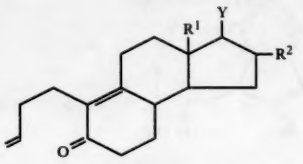
Filed Aug. 30, 1979, Ser. No. 71,404

Claims priority, application Japan, Sep. 8, 1978, 53-111093

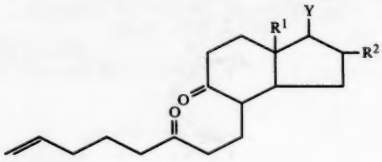
Int. Cl.³ C07C *45/32, 45/66, 49/643*

U.S. Cl. 568—344 **7 Claims**

3. Method for producing a compound of the general formula:



wherein R^1 is a lower alkyl group; R^2 is hydrogen or a lower alkyl group; Y is a protected hydroxyl group, which comprises subjecting a compound of the general formula:



wherein R^1, R^2 and Y are same as defined above, to dehydrative cyclization reaction in the presence of alkali or acid and in a solvent.

4,267,377

INTERMEDIATES FOR STEROID SYNTHESIS

Jiro Tsuji, Kamakura, Japan, assignor to Takeda Chemical Industries, Ltd., Osaka, Japan

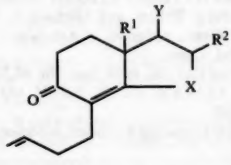
Filed Aug. 30, 1979, Ser. No. 71,405

Claims priority, application Japan, Sep. 8, 1978, 53-111092

Int. Cl.³ C07C *49/633, 49/637*

U.S. Cl. 568—374 **3 Claims**

1. A compound of the general formula:



wherein R^1 is a lower alkyl group containing from 1 to 3 carbon atoms; R^2 is H or a lower aklyl group containing from 1 to 3 carbon atoms; Y is an oxo group, H or an unprotected or protected hydroxyl group, the protective group on the protected hydroxyl being a group that may be removed under acidic condition or catalytic reduction; and X is a methylene or ethylene group.

4,267,378

2,2-DIALKOXY-6-CHLOROCYCLOHEXANONES

Carl E. Van Winckel, 1425 Sandhurst Pl., West Vancouver, British Columbia, Canada; David H. Dolphin, Vancouver, Canada; Elena Dumitrescu, Coquitlam, Canada, and Kent F. Van Winckel, West Vancouver, Canada, assignors to Carl E. Van Winckel, West Vancouver, Canada

Continuation-in-part of Ser. No. 713,784, Aug. 12, 1976, abandoned, and Ser. No. 802,181, May 31, 1977, Pat. No. 4,166,914. This application Jul. 2, 1979, Ser. No. 54,035

Int. Cl.[3] C07C *49/403*

U.S. Cl. 568—376 3 Claims

1. 2,2-Dialkoxy-6-chlorocyclohexanones in which the alkyls of the alkoxy groups are the same and contain one to four carbon atoms.

4,267,379

DECOMPOSITION OF CUMENE HYDROPEROXIDE AND RECOVERY OF BORON TRIFLUORIDE CATALYST

Richard G. Austin, Churchill; Wayne R. Pretzer, and Thaddeus P. Kobylinski, both of Gibsonia, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 965,997, Dec. 4, 1978, abandoned. This application Aug. 13, 1979, Ser. No. 66,026

Int. Cl.[3] C07C *45/53, 37/08*

U.S. Cl. 568—385 12 Claims

1. The method for cleaving cumene hydroperoxide at high selectivity to phenol and acetone which comprises the steps

(a) contacting a solution comprising about 0.1 to about 20 weight percent cumene hydroperoxide with a catalytic amount of boron trifluoride, a boron trifluoride complex with water or a boron trifluoride complex with an oxygen--containing polar organic compound at a temperature between about 25° and about 110° C. until the cleavage of said cumene hydroperoxide is substantially completed,

(b) deactivating said catalyst in a non-aqueous procedure by adding at least a stoichiometric amount of an amine selected from lower alkyl tertiary amines, lower alkyl secondary amines, mixed lower alkyl aromatic amines, aromatic amines and heterocyclic amines whereby a coordination compound of said boron trifluoride and said amine is formed,

(c) distilling the product solution at a temperature and a pressure whereby all components of the product solution are substantially distilled over except the said boron trifluoride.amine coordination compound and the polymeric tar solids produced during the cleavage reaction and the distillation procedure,

(d) separating the said boron trifluoride.amine coordination compound from the polymeric tar solids by distillation and dissociating said coordination compound at an elevated temperature, and

(e) separately recovering said dissociated boron trifluoride and amine.

4,267,380

DECOMPOSITION OF CUMENE HYDROPEROXIDE USING A LEWIS ACID CATALYST

Richard G. Austin, Churchill; Wayne R. Pretzer, and Thaddeus P. Kobylinski, both of Gibsonia, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation of Ser. No. 51,864, Jun. 25, 1979, abandoned. This application May 19, 1980, Ser. No. 151,090

Int. Cl.[3] C07C *45/53, 37/08*

U.S. Cl. 568—385 3 Claims

1. The method for cleaving cumene hydroperoxide at high selectivity to phenol and acetone which comprises contacting a solution comprising about 0.1 to about 20 weight percent cumene hydroperoxide with about 20 ppm to about one weight percent of a catalyst selected from tungsten hexafluoride, silicon tetrafluoride, stannous chloride, stannic fluoride, antimony pentachloride, sulfur monochloride and sulfur tetrafluoride at a temperature between about 25° and about 110° C.

4,267,381

PREPARATION OF SIDE-CHAIN FLUORINATED 3,3-DIMETHYL-BUTAN-2-ONE

Manfred Jautelat, Burscheid; Jörg Stetter, Wuppertal; Dieter Arlt, Cologne, and Wolfgang Krämer, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

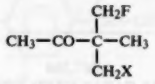
Filed Sep. 20, 1979, Ser. No. 77,447

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1978, 2843767; May 10, 1979, 2918895

Int. Cl.[3] C07C *47/14*

U.S. Cl. 568—419 3 Claims

1. A fluorine derivative of 3,3-dimethyl-butan-2-one, of the formula



in which

X is hydrogen or fluorine.

4,267,382

2,6-DICHLORO-4-METHOXY-5-METHYL-BENZENE ALDEHYDES

Werner Bollag, Basel; Rudolf Rüegg, Bottmingen, and Gottlieb Ryser, Basel, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

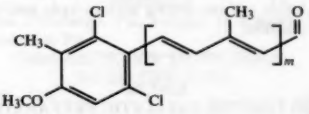
Division of Ser. No. 861,085, Dec. 15, 1977, Pat. No. 4,225,527. This application Feb. 4, 1980, Ser. No. 118,331

Claims priority, application Austria, Dec. 20, 1976, 9444/76; Switzerland, Oct. 11, 1977, 12388/77

Int. Cl.[3] C07C *47/575, 47/232*

U.S. Cl. 568—442 2 Claims

1. An aldehyde of the formula:



wherein m is zero or 1.

4,267,383

HYDROCARBONYLATION

Frank B. Booth, Anaheim, Calif., assignor to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 36,045, May 4, 1979, abandoned, which is a continuation-in-part of Ser. No. 937,653, Aug. 28, 1978, abandoned, Ser. No. 926,046, Jul. 19, 1978, and Ser. No. 886,887, Jan. 4, 1978, abandoned, which is a continuation of Ser. No. 750,770, Aug. 7, 1968, abandoned, said Ser. No. 937,653, is a division of Ser. No. 840,815, Jul. 10, 1969, Pat. No. 4,110,404, which is a continuation-in-part of Ser. No. 518,562, Jan. 4, 1966, abandoned, said Ser. No. 926,046, is a continuation of Ser. No. 464,657, Apr. 26, 1974, abandoned, which is a continuation of Ser. No. 81,502, Oct. 16, 1970, abandoned, which is a continuation of Ser. No. 642,191, May 29, 1967, abandoned. This application Nov. 5, 1979, Ser. No. 91,382

Int. Cl.[3] C07C *45/60*

U.S. Cl. 568—454 6 Claims

1. In a process for hydroformylating hydrocarbon alpha olefins having from 3 to about 25 carbon atoms to form aldehydes, wherein the process is carried out in a reaction zone: (1)

in the presence of a liquid reaction medium, (2) with carbon monoxide and hydrogen, (3) at a temperature of about 50° to about 200° C., (4) at a pressure of about 1 to about 10,000 atmospheres, and (5) with a catalyst comprising a complex between a rhodium carbonyl hydride or a rhodium carbonyl halide and an organic ligand of the formula:

wherein R_1, $R_2$and R_3 are aryl of 6 to about 9 carbon atoms, the improvement comprising:

sparging said carbon monoxide and hydrogen into said liquid reaction medium and maintaining in said reaction zone a relative concentration of hydrogen to carbon monoxide of at least 12/1, thereby effecting an increase in the yield of straight chain, relative to branched chain, aldehyde product.

4,267,384

RUTHENIUM CATALYZED PROCESS FOR ACETALDEHYDE AND ETHANOL

David W. Smith, Cincinnati, Ohio, assignor to National Distillers and Chemical Corp., New York, N.Y.

Filed Apr. 21, 1980, Ser. No. 142,286
Int. Cl.[3] C07C *27/00, 31/08, 47/06*
U.S. Cl. 568—462 **22 Claims**

1. A process which comprises reacting formaldehyde, carbon monoxide and hydrogen at a temperature of from about 75° to about 250° C. and superatmospheric pressure to form acetaldehyde in a first reaction stage and then ethanol in a second reaction stage, wherein a catalyst system initially comprised of a source of ruthenium and a source of halide is present at least during said first reaction stage.

7. A process for producing acetaldehyde and/or ethanol which comprises reacting formaldehyde, carbon monoxide and hydrogen at a temperature of from about 75° to about 250° C. and superatmospheric pressure in the presence of a catalyst system initially comprised of a source of ruthenium and a source of halide and recovering acetaldehyde and/or ethanol from said reaction.

4,267,385

PROCESS FOR THE CATALYTIC PREPARATION OF ACROLEIN AND METHACROLEIN

Sumio Umemura; Kyoji Ohdan, and Hiroyuki Asada, all of Ube, Japan, assignors to UBE Industries, Ltd., Yamaguchi, Japan

Filed Dec. 12, 1979, Ser. No. 102,992
Claims priority, application Japan, Dec. 27, 1978, 53/160109
Int. Cl.[3] C07C *45/35*
U.S. Cl. 568—479 **11 Claims**

1. A process for the catalytic preparation of acrolein or methacrolein, comprising bringing, at a temperature of from 200° to 500° C., a reaction feed containing propylene or isobutylene and molecular oxygen, each in gas phase, into contact with a catalyst consisting essentially of an oxide composition of the empirical formula:

$$Mo_aCo_bNi_cFe_dBi_eAl_fTi_gA_hO_i$$

wherein A represents at least one alkali metal atom; the subscripts a, b, c, d, e, f, g and h respectively denote the numbers of the respective atoms of the elements, the ratio a:b:c:d:e:f:g:h being in a range of 10:0 to 10:0 to 10:0.1 to 5:0.001 to 3:0.05 to 10:1 to 15:0 to 4 and the ratio a:(b+c) being in a range of 10:1 to 10, and; the subscript i represents the number of oxygen atoms which satisfies the average valency of the elements, the ratio a:i being in a range of 10:33.2 to 99.

4,267,386

OLEFIN OXIDATION CATALYST

Thomas H. Vanderspurt, Morris, N.J., assignor to Celanese Corporation, New York, N.Y.

Division of Ser. No. 960,201, Nov. 13, 1978. This application Sep. 19, 1979, Ser. No. 77,104
Int. Cl.[3] C07C *45/34*
U.S. Cl. 568—480 **11 Claims**

1. A process for the oxidation of alkenes containing between 3 and about 5 carbon atoms to the corresponding olefinically unsaturated aldehydes which comprises reacting in the vapor phase an alkene with molecular oxygen at a temperature between about 200°–525° C. in the presence of an oxidation catalyst which corresponds to the formula:

$$Mo_{12}Co_{1-7}Fe_{1-6}Ni_{1-6}Bi_{0.3-3}L_{0.55-2}M_{0.3-0.6}O_x$$

wherein Mo, Co, Fe, Ni, Bi and O are respectively the elements of molybdenum, cobalt, iron, nickel, bismuth and oxygen; L is at least one element selected from potassium and rubidium; M is at least one element selected from phosphorus, cerium, germanium, manganese, niobium, antimony and tantalum; and x represents the number of oxygen atoms between about 35 and 75 sufficient to satisfy the valence requirements of the other elements; and wherein said oxidation catalyst is prepared by a method which comprises the steps of (1) admixing and slurrying in an aqueous medium respectively compounds of Mo, Co, Ni, Bi, L and M which are at least partially water-soluble, (2) adjusting the final pH of the aqueous slurry admixture within the range between about 1–5, (3) concentrating the aqueous slurry admixture by water removal to yield a catalyst coprecipitate, (4) heating the catalyst coprecipitate at a temperature in the range between about 200°–250° C. in the presence of molecular oxygen, and (5) calcining the catalyst composition at a temperature between about 400°–600° C. in the presence of molecular oxygen.

2. A process for producing acrolein or methacrolein which comprises reacting propylene or isobutylene in vapor phase with molecular oxygen at a temperature between about 200°–525° C. in the presence of a catalyst which corresponds to the formula:

$$Mo_{12}Co_{4-5}Fe_{2-4}Ni_{2-3}Bi_{0.5-2}K_{0.65-1.3}P_{0.35-0.5}O_x$$

wherein Mo, Co, Fe, Ni, Bi, K, P and O are respectively the elements of molybdenum, cobalt, iron, nickel, bismuth, potassium, phosphorus and oxygen; and x represents the number of oxygen atoms between about 35 and 75 sufficient to satisfy the valence requirements of the other elements; and wherein said oxidation catalyst is prepared by a method which comprises the steps of (1) admixing and slurrying in an aqueous medium respectively compounds of Mo, Co, Ni, Bi, L and M which are at least partially water-soluble, (2) adjusting the final pH of the aqueous slurry admixture within the range between about 1–5, (3) concentrating the aqueous slurry admixture by water removal to yield a catalyst coprecipitate, (4) heating the catalyst coprecipitate at a temperature in the range between about 200°–250° C. in the presence of molecular oxygen, and (5) calcining the catalyst composition at a temperature between about 400°–600° C. in the presence of molecular oxygen.

4,267,387

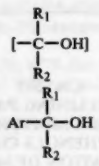
PROCESS FOR PREPARATION OF AROMATIC HYDROPEROXIDES

Ichiro Imai, Ohtake; Isao Hashimoto, Iwakuni; Keiji Suzuki, Ohtake, and Hiroaki Nakagawa, Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed Oct. 17, 1979, Ser. No. 85,587
Int. Cl.[3] C07C *179/035*
U.S. Cl. 568—568 **12 Claims**

1. A process for the preparation of an aromatic hydroperoxide by oxidizing a hydroxyalkyl-substituted aromatic com-

pound having at least one hydroxyalkyl group directly bonded to an aromatic ring carbon of the aromatic compound and being represented by the formula:



wherein Ar represents a benzene or naphthalene ring and R_1 and R_2 each represent a lower alkyl group, with hydrogen peroxide in the presence of an acid catalyst in a heterogeneous system of a water-immiscible inert aromatic hydrocarbon solvent at a reaction temperature of up to about 70° C. while removing by-product water as an azeotrope with the aromatic hydrocarbon solvent in the oxidation system; characterized in that said oxidation is carried out while feeding a vapor of a water-immiscible inert aromatic hydrocarbon solvent having a temperature higher than the reaction temperature but not exceeding about 90° C. into a liquid phase of the oxidation system.

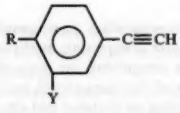
4,267,388

PROCESS FOR PRODUCING ETHYNYLBENZENES

Paul R. Darkes, Norristown; Henry F. Campbell, Lansdale, and George H. Douglas, Malvern, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Filed Jul. 12, 1979, Ser. No. 56,984
Claims priority, application Canada, Jul. 13, 1978, 307302
Int. Cl.[3] C07C *41/18, 41/24, 25/18, 25/24*
U.S. Cl. 568—642 **12 Claims**

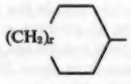
1. Process for preparing an ethynylbenzene derivative of the general formula:



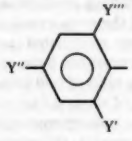
wherein

Y is hydrogen, halogen or loweralkyl of 1 to 3 carbon atoms;

R may stand for a ring of the structure:



wherein x is 1 to 3, or a ring of the structure:



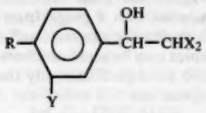
wherein

Y′ is hydrogen, halogen, loweralkyl of 1–3 carbon atoms and loweralkoxy of 1–3 carbon atoms;

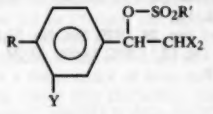
Y″ is hydrogen or halogen; and

Y‴ is hydrogen or halogen,

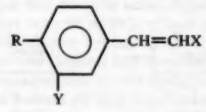
provided Y, Y′, Y″ and Y‴ are not all hydrogen at the same time, which comprises reacting a benzyl alcohol of the general formula:



wherein R and Y are as previously defined and X is chloro or bromo, with a sulfonyl chloride of the formula: $R'SO_3Cl$ wherein R′ is alkyl, aryl or a loweralkyl substituted alkyl in the presence of a base, to form the corresponding sulfonyl derivative of the formula:



reducing said sulfonyl derivative of the formula in the presence of zinc to form the halostyrene of the formula:



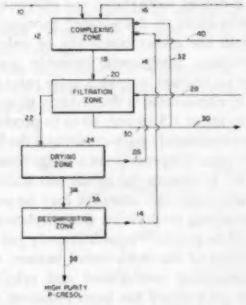
and then dehydrohalogenating said halostyrene compounds by reaction with an alkali metal alkoxide.

4,267,389

PROCESS FOR SEPARATING PARA-CRESOL FROM A MIXTURE OF METHYLATED AND ETHYLATED PHENOLS

Gerd Leston, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Jun. 29, 1979, Ser. No. 53,438
Int. Cl.[3] C07C *37/68*
U.S. Cl. 568—750 **18 Claims**



1. A process for obtaining predominantly para-cresol from a mixture of para-cresol and meta-cresol isomers, comprising the step of:

adding to the mixture one or more anhydrous or dehydrated inorganic halide salts selected from the group consisting of calcium bromide, lithium bromide, manganese bromide and magnesium chloride, in an amount to give a mole ratio

of the inorganic salt to the para-cresol isomer in the mixture from about 0.5 to one to about 1.5 to one, in the presence of a non-aqueous solvent to produce a complex predominantly with the para-cresol isomer, the mixture having a temperature in a range from about 20° C. to about 130° C. during the inorganic salt adding step;

whereby said complex may be separated from the mixture, and then decomposed to yield predominantly the para-cresol and the anhyrous inorganic salt.

4,267,390

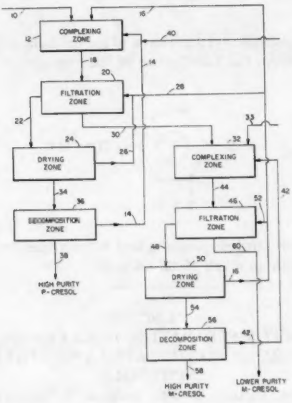
PROCESS FOR OBTAINING PARA-CRESOL AND META-CRESOL FROM A MIXTURE OF METHYLATED AND ETHYLATED PHENOLS CHARACTERIZED BY SELECTIVE COMPLEXATION WITH CALCIUM BROMIDE AND SODIUM ACETATE

Gerd Leston, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Jun. 29, 1979, Ser. No. 53,195

Int. Cl.³ C07C *37/68, 37/74*

U.S. Cl. 568—751 **29 Claims**



1. A process for separating para-cresol and metacresol isomers from a mixture comprising methylated and ethylated phenols, the process comprising the steps of:

(a) for separation of the para-cresol isomer, adding to the mixture comprising methylated and ethylated phenols one or more anhydrous or dehydrated inorganic halide salts selected from the group consisting of calcium bromide, lithium bromide, manganese bromide and magnesium chloride, in an amount to give a mole ratio of said one or more salts to para-cresol in the mixture in a range of about 0.5 to one to about 1.5 to one, so as to produce a complex between predominantly para-cresol and the halide salt, the mixture having a temperature in a range from about 20° C. to about 130° C. during the halide salt adding step,

whereby the para-cresol-salt complex may be separated from the mixture comprising methylated and ethylated phenols, and then decomposed to produce predominantly para-cresol; and

(b) for separation of the meta-cresol isomer, adding to the mixture comprising methylated and ethylated phenols from which para-cresol has been removed an amount of sodium acetate to give a mole ratio of said sodium acetate to meta-cresol in the mixture in a range of 0.5 to one to about 5 to one, so as to produce meta-cresol-sodium acetate complex, the mixture having a temperature in a range from about 0° C. to about 75° C. during the sodium acetate adding step,

whereby the meta-cresol-sodium acetate complex may be separated from the mixture comprising methylated and ethylated phenols from which para-cresol has been removed, and then decomposed to produce predominantly meta-cresol.

4,267,391

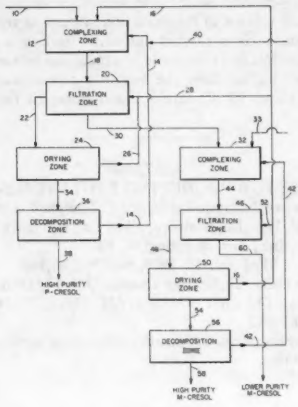
PROCESS FOR OBTAINING PARA-CRESOL AND META-CRESOL FROM A MIXTURE OF METHYLATED AND ETHYLATED PHENOLS CHARACTERIZED BY UREA CLATHRATION OF METAL-CRESOL

Gerd Leston, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Jun. 29, 1979, Ser. No. 53,531

Int. Cl.³ C07C *37/68, 37/74*

U.S. Cl. 568—751 **25 Claims**



1. A process for separating para-cresol and meta-cresol isomers from a mixture comprising methylated and ethylated phenols, the process comprising the steps of:

(a) for separation of the para-cresol isomer, adding to the mixture comprising methylated and ethylated phenols one or more anhydrous or dehydrated inorganic halide salts selected from the group consisting of calcium bromide, lithium bromide, manganese bromide and magnesium chloride, in an amount to give a mole ratio of said one or more salts to para-cresol in the mixture in a range of about 0.5 to one to about 1.5 to one, in the presence of a non-aqueous solvent so as to produce a complex between predominantly para-cresol and the salt, the mixture having a temperature in a range from about 20° C. to about 130° C. during the halide-salt adding step,

whereby the para-cresol-salt complex may be separated from the mixture comprising methylated and ethylated phenols, and then decomposed to produce predominantly para-cresol; and

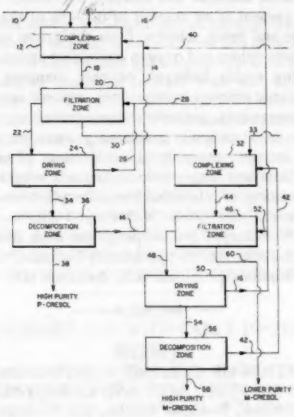
(b) for separation of the meta-cresol isomer, adding to the mixture comprising methylated and ethylated phenols from which para-cresol has been removed an amount of urea to give a mole ratio of said urea to meta-cresol in the mixture in a range of about 0.7 to one to about 1.3 to one, in the presence of a non-aqueous solvent so as to produce meta-cresol-urea complex, the mixture having a temperature in a range from about 0° C. to about 100° C. during the urea adding step,

whereby the meta-cresol-urea complex may be separated from the mixture comprising methylated and ethylated phenols from which para-cresol has been removed, and then decomposed to to produce predominantly meta-cresol.

4,267,392
PROCESS FOR OBTAINING PARA-CRESOL AND META-CRESOL FROM A MIXTURE OF METHYLATED AND ETHYLATED PHENOLS CONTAINING META-PARA-CRESOL

Gerd Leston, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Jun. 29, 1979, Ser. No. 53,532
Int. Cl.[3] C07C *37/68, 37/74*
U.S. Cl. 568—751 15 Claims



1. A process for successively separating para-cresol and meta-cresol isomers from a mixture of methylated and ethylated phenols, comprising:

(a) adding to the mixture one or more anhydrous or dehydrated inorganic salts selected from the group consisting of calcium bromide, lithium bromide, manganese bromide and magnesium chloride, in an amount to give a mole ratio of said salt to para-cresol in the mixture in a range from about 0.5 to one to about 1.5 to one, in the presence of a non-aqueous solvent to produce a solid complex between predominantly para-cresol and said salt, the mixture having a temperature in a range from about 20° C. to about 130° C. during the salt adding step, said non-aqueous solvent being an organic solvent selected such that any complex formed with said solvent is weaker than the complex formed between para-cresol and said salt;

whereby said complex may be separated from the mixture and then decomposed to produce predominantly para-cresol; and

(b) adding to the mixture from which para-cresol has been removed an amount of calcium bromide to give a mole ratio of calcium bromide to meta-cresol in the mixture in a range from about 0.5 to one to about 1.0 to one in the presence of a non-aqueous solvent and at a temperature in a range from about −10° C. to about 40° C. to form predominantly meta-cresol-calcium bromide complex, said non-aqueous solvent selected such that any complex formed with said solvent is weaker than the complex formed between meta-cresol and said calcium bromide;

whereby said meta-cresol-calcium bromide complex may be separated from the mixture, and then decomposed to produce predominantly high purity meta-cresol.

4,267,393
PROCESS FOR PRODUCING ETHERS BY REACTING OLEFINS WITH ALCOHOLS

Bernard Torck, Boulogne sur Seine; Hugo Van Landeghem, Oytier Saint Oblas; Quang D. Vu, Paris, and Michel Hellin, Andresy, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Nov. 8, 1979, Ser. No. 92,317
Claims priority, application France, Nov. 8, 1978, 78 31768
Int. Cl.[3] C07C *41/06*
U.S. Cl. 568—697 18 Claims

1. In a process for manufacturing ethers by contacting a mixture of at least one olefin having a double bond on a tertiary carbon atom and at least one alcohol with a sulfonated ion exchange resin catalyst in the acid form, the improvement comprising passing a liquid mixture of fresh reactants comprising said at least one olefin and said at least one alcohol, together with a liquid recycle stream as hereinafter defined at a feed rate of from 0.1 to 15 times the feed rate of the fresh reactants, upwardly through a first reaction zone containing a catalyst bed of particles of said sulfonated ion exchange resin in the acid form, at a temperature of from 60° to 120° C., said temperature being lower than the boiling temperature of the constituent of highest volatility in the mixture passing through the first reaction zone at the selected pressure, while maintaining a feed rate which is sufficient to expand the volume of said catalyst bed by at least 2% and to disperse the catalyst particles therein but insufficient to carry a substantial proportion of catalyst out of said first reaction zone, the contact time being selected to convert from 60 to 95% of said olefin; discharging the liquid product mixture formed in the first reaction zone, cooling a first portion thereof, and recycling the cooled portion to the first reaction zone as said liquid recycle stream, and feeding a second portion of said liquid product mixture to a second reaction zone containing a fixed bed of said sulfonated ion exchange resin catalyst in the acid form, at a temperature of from 30° to 70° C., the temperature in the second zone being at least 10° C. lower than the outlet temperature of the first reaction zone and lower than the boiling temperature of the constituent of highest volatility in the mixture passing through the second reaction zone at the selected pressure.

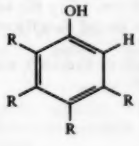
4,267,394
PHENOL ALKYLATION

Robert M. Parlman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 23, 1979, Ser. No. 23,354
Int. Cl.[3] C07C *37/11*
U.S. Cl. 568—792 9 Claims

1. A process for the production of mono-substituted ortho-alkylated phenolic compounds in high yields and selectivity which comprises reacting

(a) at least one monohydroxy, monocyclic phenolic compound having at least one ortho-hydrogen represented by the general formula



wherein each R is a monovalent substituent such as hydrogen, or an alkyl, aryl or alkylaryl radical containing 1 to 12 carbon atoms with

(b) a slight molar excess of a monohydroxy alcohol represented by the formula

R'—OH

wherein R' is an alkyl or cycloalkyl radical containing 1 to 12

carbon atoms to the amount of phenolic compound (a) used in the presence of

(c) a catalytic amount of a catalyst consisting essentially of a dialkylether complex of boron trifluoride represented by the formula

$$BF_3.OR_2\Delta$$

wherein R'' is an alkyl radical containing 1–3 carbon atoms at reaction conditions sufficient to selectively alkylate (a) in the ortho-position to the significant reduction of alkylation in the meta- and para-positions and produce mono-substituted ortho-alkylated phenolic compounds in high yields and high selectivity.

4,267,395

2-DECARBOXY-2-HYDROXYMETHYL-19-HYDROXY-19-METHYL-6A-CARBA-PGI$_2$ COMPOUNDS

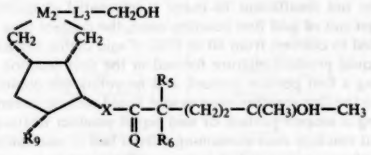
John C. Sih, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 54,720, Jul. 5, 1979, Pat. No. 4,225,507. This application Mar. 3, 1980, Ser. No. 126,465

Int. Cl.^{3} C07C *33/05*

U.S. Cl. 568—819 **4 Claims**

1. A prostacyclin-type compound of the formula



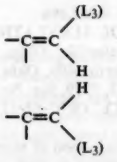
wherein L_3 is

(1) $-(CH_2)_n-$, wherein n is one to 5, inclusive,

(2) $-(CH_2)_p-CF_2-$, wherein p is 2, 3, or 4,

or (3) $-CH_2-CH=CH-$;

wherein M_2 is



(1)

(2)

wherein Q is oxo, α—H:β—H, α—OH:β—R_4, or α—R_4-:β—OH,

wherein R_4 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,

wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro;

wherein R_2 is hydrogen or hydroxyl; and wherein X is

(1) trans—CH=CH—,

(2) cis—CH=CH—,

(3) —C≡C—, or

(4) $-CH_2CH_2-$.

4,267,396

PRODUCTION OF SODIUM AND POTASSIUM ALKOXIDES

Seymour Mann, New York, N.Y., assignor to Aceto Chemical Co, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 4,712, Jan. 19, 1979, abandoned. This application Dec. 10, 1979, Ser. No. 102,237

Int. Cl.^{3} C07C *29/70, 29/94*

U.S. Cl. 568—851 **9 Claims**

1. Method of producing sodium and potassium alkoxides, which comprises reacting a reaction mixture consisting essentially of calcium oxide, an alcohol of up to 6 carbon atoms, and an anhydrous metal hydroxide wherein the metal is sodium or potassium in the presence of a surfactant to form the corresponding metal alkoxide and calcium hydroxide, said surfactant being present in an amount of 0.1–4% of the anhydrous metal oxide and being selected from the group consisting of cationic amine oxides and oxygen containing amines other than those having amide linkages, cationic diamines and polyamines, cationic primary monoamines, cationic secondary and tertiary monoamines, cationic oxygen-containing quaternary ammonium salts, cationic quarternary ammonium salts not containing oxygen, nonionic glycerol esters of mixed acids, nonionic ethers and amphoteric surfactants selected from the group consisting of (1-carboxyheptadecyl) trimethylammonium hydroxide, inner salt, N-dodecyl-8-alanine, partial sodium salt, N-dodecyl-3-iminodipropionic acid, disodium salt, N-(dodecyl)-8-alamine, N-(tetradecyl)-8-alanine, and N-(tallow alkyl)-3-iminodipropionic acid, disodium salt.

4,267,397

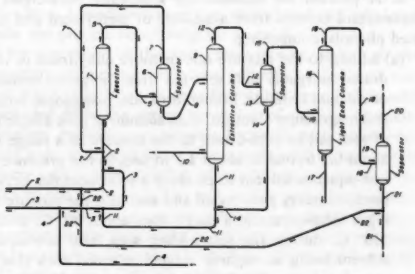
HYDRATION OF OLEFINIC COMPOUNDS WITH DILUTE SULFURIC ACID AND COBALT SULFATE

Robert J. Schmidt, Hoffman Estates, and Tamotsu Imai, Mt. Prospect, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Dec. 21, 1979, Ser. No. 106,312

Int. Cl.^{3} C07C *29/04*

U.S. Cl. 568—899 **4 Claims**

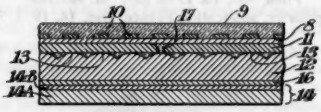


1. A process for the direct hydration of an olefinic compound which comprises treating said olefinic compound with a dilute aqueous sulfuric acid solution in the presence of cobalt sulfate at a temperature of from about 100° to 300° C. and a pressure of from about 1 to about 250 atmospheres, the concentration of sulfuric acid in said solution being from about 0.05 to about 40% by weight, and recovering the resultant alcohol.

4,267,398
THIN FILM PHOTOVOLTAIC CELLS

Allen Rothwarf, Philadelphia, Pa., assignor to University of Delaware, Newark, Del.

Filed May 29, 1979, Ser. No. 43,339
Int. Cl.³ H01L *31/04*
U.S. Cl. 136—256 1 Claim

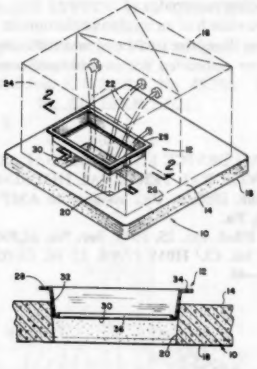


1. In a front wall photovoltaic cell of the type comprising an opaque electrical contact, a collector on and in ohmic electrical contact with said opaque electrical contact, an absorber on and in rectifying electrical contact with said collector and forming a junction therewith, a transparent electrical contact in ohmic electrical contact with said absorber, and an antireflection coating, the improvement being said absorber being a copper bearing material, said transparent electrical contact being in the form of a grid made from a material selected from the group consisting of copper, silver, chromium, nickel and their alloys, a diffusion barrier layer deposited on said absorber and providing a continuous layer between said absorber and said grid, and said diffusion barrier layer being of the same material as the material as of said antireflection coating.

4,267,399
TRANSFORMER PAD WITH CABLE PROTECTIVE SLEEVE

Robert J. Lux, Jr., Broken Arrow, Okla., assignor to Thermodynamics Corporation, Broken Arrow, Okla.

Continuation of Ser. No. 7,419, Jan. 29, 1979, abandoned. This application Jun. 3, 1980, Ser. No. 156,165
Int. Cl.³ H02B *5/00*
U.S. Cl. 174—1 5 Claims



1. A means for supporting a transformer upon the earth's surface comprising:

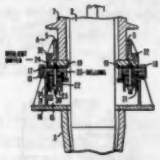
a pad of rigid material having an upper and lower surface, the lower surface adapted to engage the earth's surface and the upper surface adapted to receive and support a transformer thereon, the pad having a cable opening therein communicating between the lower and upper surfaces; and

a hollow sleeve of rigid material of short height, having an upper and lower end and an outer and inner surface, the outer surface being non-cylindrical and configured to provide an interference fit with said pad cable opening, the sleeve being removably received and supported by said pad in said cable opening and dimensioned such that the upper end extends above the upper surface of said pad, the interior of the sleeve being dimensioned to receive cables therethrough.

4,267,400
SEISMIC BUSHING

Mitsuhiro Kishida, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 2, 1980, Ser. No. 155,329
Claims priority, application Japan, Jun. 28, 1979, 54-82868
Int. Cl.³ H01B *17/26, 17/30*
U.S. Cl. 174—31 R 6 Claims



1. A seismic bushing for a high voltage electrical apparatus charged with an insulating material and having a cylindrical mounting flange, comprising:

a porcelain tube;

an adapter rigidly connected to one end of said tube;

a connecting plate having a plurality of cylindrical pots, said plate being rigidly connected to the mounting flange such that said pots extend into said mounting flange;

a plurality of piston heads located within said cylindrical pots;

a plurality of connecting rods located within said cylindrical pots, said connecting rods being connected at one end to said adapter and at the other end to said piston heads;

a plurality of springs disposed on said connecting rods, said springs providing a predetermined fastening force between said adapter and said connecting plate such that said tube is free to move relative to said mounting flange, said springs and said piston heads absorbing the energy of said motion upon the development of a clearance between said adapter and said connecting plate;

a resilient buffer member interposed between said adapter and said connecting plate to provide mechanical stress relief upon the closing of said clearance between said adapter and said connecting plate; and

a sealing member for sealing the interface between said adapter and said connecting plate for containing the insulating material.

4,267,401
SEAL PLUG

William L. Wilkinson, 258 W. 31st St., Hamilton, Ontario, Canada (L9C 5G4)

Filed Jul. 3, 1978, Ser. No. 921,825
Int. Cl.³ H02G *15/013*
U.S. Cl. 174—77 R 8 Claims

1. A seal plug for use in a conduit having a plurality of passages therethrough for receiving a respective number of elongated members therein to pass them through the seal plug, said seal plug comprising:

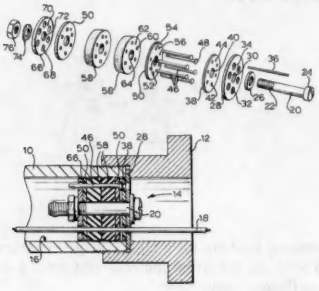
a plug core including at least one radially-expansible seal member having a respective plurality of passages therethrough and adapted for insertion into said conduit in unexpanded condition, the plug core closing and sealing said conduit when inserted therein and in radially-expanded condition, and also when in radially-expanded condition sealing around an elongated member that is inserted in its respective passage;

a pair of seal plug pressure members each having a respec-

tive plurality of passages therethrough and between which the seal member is sandwiched so as to be expanded radially upon axial movement of the pressure members toward each other;

a removable insert for each passage closing the respective passage in said seal member, and sealed in the passage along the length thereof when the plug core is in the radially-expanded condition, each removable insert consisting of a headed pin passing through the seal member and the pressure members;

retainer means engaging said removable headed pins to



retain them in their respective passages, the said retainer means consisting of an apertured plate having a respective plurality of apertures therein and having each pin head engaged in a respective aperture thereof of smaller diameter than the pin head, each pin head being forcible through the respective aperture for removal of the pin by the application of a suitable force to the pin shaft, and

axial compression means passing through the seal member, the pressure members and the retainer member for moving the pressure members toward each other to axially compress the seal member and effect the said radial expansion thereof.

4,267,402

POLYMER CONCRETE BODY WITH VIBRATION MOLDED THREADS, METHOD OF MAKING SAME, AND ELECTRICAL INSULATOR PROVIDED WITH THE SAME

David H. Reighter, Roslyn, Pa., assignor to Gould Inc., Rolling Meadows, Ill.

Continuation-in-part of Ser. No. 931,493, Aug. 7, 1978, abandoned. This application Jun. 15, 1979, Ser. No. 48,722

Int. Cl.³ H01B *17/14, 3/40;* **B29D** *1/00*

U.S. Cl. 174—137 R **35 Claims**

1. A body of an acicular aggregate bonded by a cured synthetic resin binder having at least one thread vibration molded therein.

11. A method of manufacturing a body of an acicular aggregate bonded by a cured synthetic resin binder having at least one thread vibration molded therein comprising mixing of said aggregate and uncured synthetic resin binder under a vacuum of at least about 27 inches of mercury, vibration molding the resulting admixture against at least one thread die, and curing said polymer.

4,267,403

ELECTRIC LINE INSULATOR MADE OF ORGANIC MATERIAL AND HAVING AN INNER SEMI-CONDUCTIVE PART EXTENDING BETWEEN END ANCHOR FITTINGS

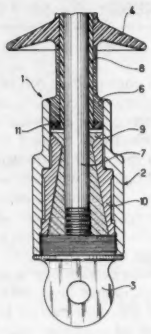
Laurent Pargamin, Vichy, France, assignor to Ceraver, Paris, France

Filed Nov. 16, 1978, Ser. No. 961,163

Claims priority, application France, Dec. 14, 1977, 77 37652

Int. Cl.³ H01B *17/42, 17/02*

U.S. Cl. 174—140 S **3 Claims**



1. In an electric line insulator comprising a high tensile strength bar made of a composite material which comprises inorganic or organic fibers or threads bonded together by a hardening synthetic resin, anchor fittings, the ends of said bar being embedded in said anchor fittings by means of a bedding material which directly surrounds said ends, the improvement wherein:

said bar is a semi-conductor bar,

the ends of said bar being embedded in said anchor fittings by means of semi-conductor sealing material constituting said bedding material, and

a protective sheath of an insulative elasomeric material being fixed over the entire surface of said bar except for the ends of said bar embedded within said semi-conductor sealing material.

4,267,404

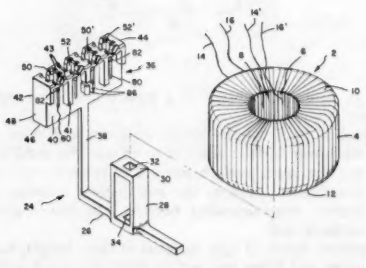
SUPPORTING DEVICE FOR TOROIDAL COIL HAVING INTEGRAL TERMINAL HOUSINGS

Carl W. Rohde, Hellam, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 25, 1979, Ser. No. 32,999

Int. Cl.³ H01F *17/08, 15/10, 15/02*

U.S. Cl. 178—46 **12 Claims**



1. A device for supporting a toroidal coil in a stack containing a plurality of identical coils, said device having integral

terminal housing means for connecting the wires in said coil to lead wires, said device comprising:

a one-piece molded plastic member having a coil support portion extending in a first plane, a coil locating post means extending normally from said coil support portion at a central location thereon, said locating post means being dimensioned to be received in the open center of said toroidal coil and accurately locate said coil with said coil on said coil support portion, said post means having a free end which is spaced from said support portion by a distance substantially equal to the height of said coil,

a deformable housing support arm extending normally from said coil support portion, said housing support arm being spaced from said locating post means by a distance which is sufficient to receive a section of said toroidal coil between said arm and said post means, said housing support arm having a terminal-receiving housing on its end,

a plurality of terminal-receiving cavities extending into said housing, each of said cavities being dimensioned to receive a terminal for connecting a coil wire to a lead wire,

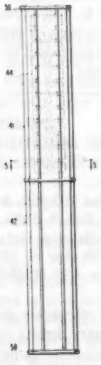
first interengaging means on said housing and on said free end of said locating post means for securing said housing to said free end with said housing substantially against said one side of said coil, and second interengaging means on said housing and on said coil support portion for securing said device to identical devices on identical coils which are stacked against said coil on a common axis whereby, upon positioning said coil on said coil support portion with said locating post means extending through the central opening in said coil, connecting the wires of said coil to lead wires by means of terminals received in said cavities, and bending said housing support arm to position said housing against said free end of said locating post means, said housing can be secured to said free end of said locating post means by said first interengaging means, and said device and said coil can be stacked against identical coils and secured to said identical coils by said second interengaging means.

4,267,405

STEREO SPEAKER SYSTEM FOR CREATING STEREO IMAGES

Roger H. Russell, Binghamton, N.Y., assignor to McIntosh Laboratory, Inc., Binghamton, N.Y.

Filed Jun. 5, 1979, Ser. No. 45,709
Int. Cl.³ H04R *5/02*
U.S. Cl. 179—1 E **10 Claims**



1. A stereo speaker system adapted for home use in a room defined by perpendicular surfaces and arranged to increase stereo image perception by reducing spurious and confusing sound images comprising:

a pair of low frequency speaker assembly means for radiating acoustic energy in the frequency range below 1000 Hz.,

a pair of high frequency speaker assembly means for radiating acoustic energy in the frequency range above 1000 Hz., each of said pair consisting of:

a plurality of high frequency dynamic speakers having front and rear surfaces and radiating acoustic energy only from said front surface,

enclosure means for mounting said speakers in a single column with minimum distance between adjacent speakers, said plurality being of such number that said column will substantially completely extend between a pair of parallel surfaces defining one dimension of said room,

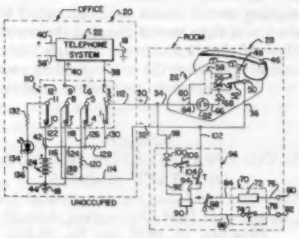
said enclosure means supporting said assembly means adjacent a supporting surface perpendicular to said parallel surfaces and locating said front surface of said speakers to minimize distance between said front surface and said supporting surface.

4,267,406

APPARATUS UTILIZING PORTIONS OF A CONVENTIONAL TELEPHONE INSTALLATION FOR SELECTIVELY CONTROLLING ELECTRICALLY OPERATED, TEMPERATURE REGULATING EQUIPMENT

James E. Perry, 9814 Hardesty, Kansas City, Mo. 64134

Filed Aug. 27, 1979, Ser. No. 69,710
Int. Cl.³ H04M *11/00*
U.S. Cl. 179—2 A **7 Claims**



1. In apparatus utilizing portions of a conventional telephone installation for selectively controlling electrically operated, temperature regulating equipment, wherein said installation includes a number of telephones each located within a corresponding remote area and having internal telephone components, internal electrical circuitry for intercoupling said components and a pair of externally extending, electrically conductive, connection leads electrically coupled with said circuitry, a pair of electrically conductive coupling lines for each telephone electrically coupled with said connection leads of the latter and extending to a central area, a central telephone system presenting within said central area for each telephone a pair of telephone line leads normally energized by said system with a direct current electrical potential therebetween, and terminal means presenting a source of direct current electrical potential within said central area, wherein each telephone further includes a handset shiftable between standby and use positions thereof, an electrically responsive message alert indicator and an internal electrical switching assembly responsive to the positioning of said handset for electrically coupling said indicator with said connection leads only when said handset is in said standby position thereof, and wherein said equipment includes a temperature altering device within each remote area having an electrical operating circuit adapted for coupling with a source of operating power for said device:

electrical switching structure for each telephone selectively actuatable into at least a normal telephone operating condition and a temperature controlling condition,

each switching structure being also selectively actuatable into a message alert signalling condition,

each switching structure being operable, when in said normal telephone operating condition thereof, for electrically coupling said coupling lines for the corresponding telephone with said telephone line leads for said telephone for flow of electrical current due to said potential between said telephone line leads through said coupling lines in one direction,

each switching structure being operable, when in said temperature controlling condition thereof, for electrically coupling said coupling lines for the corresponding telephone with said direct current source terminal means for flow of electrical current due to said potential between said source terminals through said coupling lines in a direction opposite said one direction,

each switching structure being operable, when in said message alert signalling condition thereof, for electrically coupling one of said coupling lines for the corresponding telephone with one of said telephone line leads for said telephone and electrically coupling said direct current source terminal means in voltage adding series between the other of said coupling lines for said telephone and the other of said telephone line leads for said telephone.

electrical switching means for each telephone electrically coupled with said operating circuit of the corresponding device for controlling the latter,

each switching means being provided with an operably associated, electrically responsive, actuating means having a pair of electrically conductive, control leads; and

electrical circuit means for electrically coupling said control leads of each switching means with said coupling lines for the corresponding telephone,

each coupling circuit means being provided with unidirectional current flow means coupled therewith for permitting flow of electrical current through said coupling circuit means only when the corresponding switching structure is in its temperature controlling condition.

4,267,407
METHOD AND APPARATUS FOR THE TRANSMISSION OF SPEECH SIGNALS

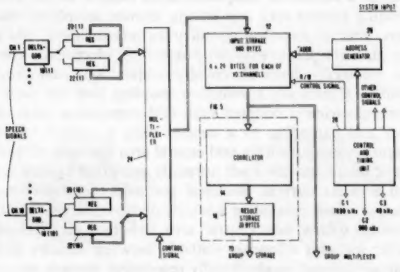
Hans R. Schindler, and Peter Vettiger, both of Langnau, Switzerland, assignors to IBM Corporation, Armonk, N.Y.

Filed Sep. 27, 1979, Ser. No. 79,412

Claims priority, application Switzerland, Oct. 27, 1978, 11115/78

Int. Cl.³ H04J *6/02*; G10L *1/10*

U.S. Cl. 179—15.55 R **8 Claims**



1. A method for coded transmission of speech signals, in which selected portions of a speech signal are not transmitted and are replaced in the receiver by stored previous portions of the same speech signal, the processing of a speech signal, comprising:

generating periodically a new fixed-length coded speech segment while at least the two last-previous segments are kept in storage in the transmitter;

determining in the transmitter in each frame period, the best correlated signal subsection of segment length within the stored previous segments, and its offset, both with respect to the new segment;

suppressing selectively a whole segment from transmission and transmitting instead an indication of the offset for the best correlated previous signal subsection; and

storing in the receiver, at least the two last-previous segments and replacing a suppressed segment by the best correlated subsection of the stored segments in response to the received offset indication.

4,267,408
ARRANGEMENT FOR APPLYING A SIGNAL TO A TRANSMISSION LINE

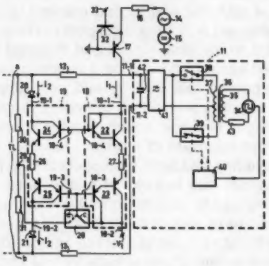
Franciscus A. C. M. Schoofs, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 22, 1979, Ser. No. 51,085

Claims priority, application Netherlands, Jul. 13, 1978, 7807531

Int. Cl.³ H04M *19/00*

U.S. Cl. 179—77 **4 Claims**



1. An arrangement for transferring a signal to a two wire transmission line, such a telephone line, comprising a source of d.c. voltage connected between said two wires for symmetrically feeding said line with a d.c. current, a bidirectional current source having a pair of high internal resistance output terminals each connected to a respective one of said two wires for supplying to each wire equal and oppositely directed currents, a circuit for supplying a reference voltage to said bidirectional current source, and means for superimposing said signal on a direct current and for applying said signal superimposed on said direct current to said voltage reference circuit so that the currents supplied to each of said wires by said bidirectional current source are proportional to the current applied to said voltage reference circuit.

4,267,409
KEYBOARD DECADE DIGITAL DIAL

Carlo Baldoni, 76 Via Villa Musone, 60025 Loreto (Ancona), Italy

Continuation of Ser. No. 703,250, Jul. 7, 1976, abandoned. This application Feb. 9, 1979, Ser. No. 10,986

Claims priority, application Italy, Jul. 15, 1975, 620 A/75; Sep. 25, 1975, 626 A/75; Apr. 9, 1976, 48925 A/76

Int. Cl.³ H04M *1/274*

U.S. Cl. 179—90 B **25 Claims**

1. A decade digital telephone dial unit for substitution in a telephone having a rotary dialing system, conventional phonic section and handset actuated switch for coupling and decoupling said telephone with the telephone lines of a telephone system wherein said telephone is ready for use by virtue of its coupling to said telephone lines when said handset is removed from said telephone, comprising:

power supply means coupled to said telephone lines and receiving the electrical current conducted therethrough

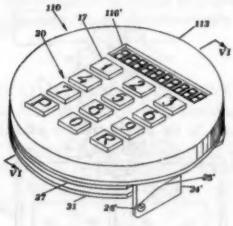
for converting said electrical current to voltages suitable for powering said decade digital telephone dial unit;

a keyboard system positionable in said telephone in place of said rotary dial, said keyboard system including a support base having a plurality of openings therein, a plurality of key switches each being associated with a decimal digit and each movably positioned in an associated one of said openings, and encoding logic circuit means coupled to said key switches and having a plurality of electrical contacts thereon, said contacts being selectively closed by depression of selected ones of said key switches;

pulse generator circuit means coupled to said keyboard system for storing on command from the switching of the key switches of said keyboard system at least one stream of decimal digits corresponding to at least one telephone number, and for transmitting on command from said keyboard system said stored telephone number to said telephone lines in the form of pulses;

clock circuit means coupled to said pulse generator circuit means for generating basic timing pulses for synchronizing and controlling the operations of said pulse generator circuit means;

zero set marker means coupling said clock circuit means to said pulse generator circuit means for generating zero set markers to reset said pulse generator circuit means;



first electronic switching means for opening and closing said telephone lines for the transmission and reception of telephone numbers to and from said telephone lines in accordance with signals derived from said pulse generator circuit means;

second electronic switching means for muting said phonic section by shorting it in accordance with signals derived from said pulse generator circuit means; and

protection circuit means coupled between said first and second electronic switching means and said telephone lines for protecting said digital keyboard system from telephone line inversion;

wherein said keyboard switching means includes key switches each associated with a decimal digit 0-9 and R and P key switches wherein a first operation of said R switch causes a previously dialed and engaged number to be stored by said pulse generator circuit means and a second operation of said R switch causes said stored number to be redialed and wherein a first operation of said P switch causes a number dialed during a telephone conversation to be stored by said pulse generator circuit means and a second operation of said P switch causes the telephone line to be cleared and the stored number dialed.

4,267,410

PROSTHESIS

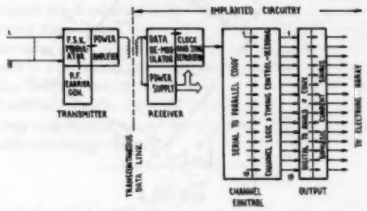
Ian C. Forster, Hawthorn; James F. Patrick, North Melbourne; Yit C. Tong, Burwood; Raymond C. Black, Carlton, and Graeme M. Clark, Eltham, all of Australia, assignors to The University of Melbourne, Parkville, Australia

Filed Nov. 1, 1978, Ser. No. 956,795

Claims priority, application Australia, Nov. 3, 1977, PD2291

Int. Cl.³ H04R *25/00*

U.S. Cl. 179—107 BC **5 Claims**



THE OVERALL PROSTHETIC SYSTEM.

1. An aural prosthesis system comprising:

a first part adapted to be located exteriorally of the body to transmit a data signal and a second part adapted to be located within the body to receive said data signal,

said data signal comprising a plurality of sequential frames of an audio signal,

each of said frames having a set of channel signals,

each member of said set of channel signals including a first portion indicative of the channel signal intensity and a second portion indicative of the channel signal timing within the associated frame,

a transmitter in said first part for transmitting said frames of said data signal as a series of sets of channel signals,

a receiver in said second part for receiving the signal transmitted by said transmitter,

first storage means in said second part for storing each member of a set of channel signals as it is received,

loading means to load said sets of channel signals into said first storage means,

second storage means in said second part to store each member of a set of channel signals,

a plurality of electrodes adapted to be coupled to stimulate aural nerve endings, and

coupling means to couple each member of the set of channel signals in said second storage means to a separate one of said electrodes, said first portion of each said members of said set determining the intensity of stimulation to be applied by the associated electrode and said second portion of each of said members of said set determining the time within the associated frame in which that stimulation is initiated by said associated electrode,

said coupling means coupling the channel signals of a frame from said second storage means to said electrodes while said loading means is loading the set of channel signals from the next successive frame into said first storage means.

4,267,411

PUBLIC TELEPHONE SECURITY BRACKET

Vernon R. Raines, South Houston, Tex., assignor to Joyce Anita Raines, So. Houston, Tex., a part interest

Filed Oct. 15, 1979, Ser. No. 84,740

Int. Cl.³ H04M *1/00, 17/02*

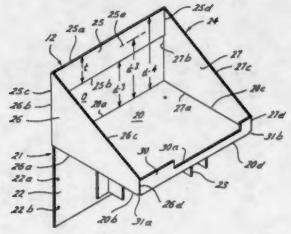
U.S. Cl. 179—184 **7 Claims**

1. An anti-theft bracket adapted for attachment to the back mounting panel for a public telephone booth housing and to engage the bottom portion of a public telephone unit attached to such back mounting panel, comprising:

a bottom member adapted to receive the bottom of a public telephone unit;

bracket mount means attached with said bottom member and depending downwardly from said bottom member for mounting said anti-theft bracket to the back mounting panel of a public telephone booth housing; and

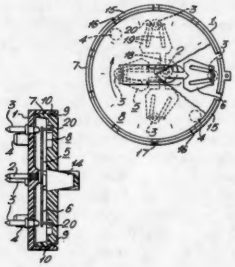
an anti-theft bar and bar mount means mounting said anti-theft bar a predetermined distance from said bottom member for positioning between such back mounting panel of such public telephone booth housing and a public telephone unit in between spaced rows of booth mounting bolts which extend through such public telephone unit and such mounting panel so that one of said rows of mounting bolts is engaged by such anti-theft bar in response to unauthorized relative movement between said bottom member and such public telephone unit.



4,267,412
ELECTRICAL SWITCH

Johannes T. M. Janssen, Hedel; Hermanus P. J. Gilissen, Esch; Lucas Soes, Rosmalen; Ludovicus C. Van Der Sanden, and Petrus R. M. Van Dijk, both of 's-Hertogenbosch, all of Netherlands, assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 22, 1979, Ser. No. 51,089
Int. Cl.[3] H01H *19/60*
U.S. Cl. 200—6 B **6 Claims**

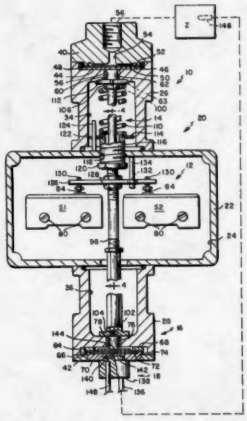


1. An electrical switch comprising a circular base formed of electrically insulating material, an operating member of circular shape mounted for rotation on said base about an axis of rotation passing through the centers of said base and said operating member, said base and operating member including engaging portions along their respective peripheries which cooperate to mount said operating member for rotation on said base, said engaging portions including indexing means for indexing the motion of said operating member to one of a plurality of positions relative to said base, an input contact and a plurality of output contacts mounted on said base at positions spaced around the center of said base at mutually different distances from the center of said base, and a bridging contact fixedly mounted on the input contact having a plurality of radially extending resilient contact arms respectively associated with the output contacts, said operating member being formed with a plurality of arcuate cam projections thereon positioned at mutually different radii measured from the axis of rotation of the operating member such that the arcuate cam projections engage the contact arms of the bridging contact as said operating member is rotated relative to said base, there being at least one said arcuate cam projection associated with each output contact to urge the contact arms into contact with the associated output contacts whereby in each of the relative positions of the operating member the bridging contact is caused to provide a connection between the input contact and a respective one or combination of the output contacts.

4,267,413
TEMPERATURE COMPENSATED PRESSURE CONTROL

Robert D. Reis, Hingham, Mass., assignor to United Electric Controls Company, Watertown, Mass.

Filed Sep. 11, 1978, Ser. No. 941,276
Int. Cl.[3] H01H *35/34*
U.S. Cl. 200—81.4 **6 Claims**



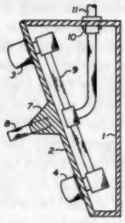
1. A temperature compensated pressure control device comperising a first diaphragm, means defining a conductor connecting one side of said first diaphragm to a pressurized zone, said first diaphragm comprising a membrane clamped within a chamber between a rib at one side of the chamber and a ring and disk at the other side of the chamber, switch means, transmitter means for transmitting movement of the first diaphragm to actuate the switch means comprising a rod and a post supported at the center of the disk in axial alignment with the rod for limited movement between the disk and the end of the rod, means operable by actuation of the switch means to establish a predetermined pressure in said pressurized zone, and means for predisposing the transmitter to compensate for a change in temperature from the normal predetermined temperature in said pressurized zone comprising a second diaphragm arranged to effect movement of the transmitter and sensing means responsive to a change in temperature in the pressurized zone for effecting compensating movement of the diaphragm.

4,267,414

FOOT CONTROL FOR SNOW PLOWS

Michael B. Brueggeman, 63 Chestnut St., Painesville, Ohio 44077, assignor to Michael B. Brueggeman and Henry C. Brueggeman, both of Eastlake, Ohio

Filed Aug. 2, 1979, Ser. No. 63,147
Int. Cl.[3] H01H *21/26*
U.S. Cl. 200—86.5 5 Claims



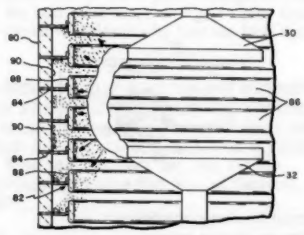
1. Foot control construction comprising a body having a first set of operating means spaced fore and aft for toe and heel operation respectively, a second set of like means similarly spaced, positioned adjacent the first set for like operation, said sets of operating means extendly upwardly an arch support element extending transversely between the first and second toe operating means and the first and second heel operating means, and a reference member extending upwardly relative to the body beyond said sets of operating means and located between the said sets of operating means to prevent the operation of both toe operating means simultaneously.

4,267,415

CURRENT LIMITER VACUUM ENVELOPE

Francis A. Holmes, Monroeville; Clive W. Kimblin, and Joachim V. R. Heberlei, both of Pittsburgh, all of Pa., assignors to Electric Power Research Institute, Palo Alto, Calif.

Filed Oct. 6, 1977, Ser. No. 839,813
Int. Cl.[3] H01H *33/66*
U.S. Cl. 200—144 B 2 Claims



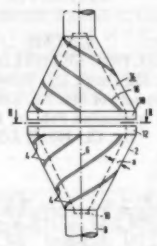
1. A current interrupter for rapidly interrupting currents associated with power lines comprising: an evacuated envelope having spaced end portions and an intermediate insulating portion sealed to said end portions, a pair of electrode members each supported within said envelope by one of said end portion of said envelope, said electrode members being relatively movable along an axis and within said envelope into mutual contact to complete an electrical path, said electrode members also being separable to induce current interruption thereby causing an arc to arise which carries arc current between said electrode members in a direction generally along said axis, means for producing a magnetic field between said electrode members to rapidly extinguish the arc, said magnetic field having lines of magnetic force transverse to said axis, said insulating portion of said envelope being spaced from and surrounding said electrode members and being substantially cylindrical in shape, wherein said lines of magnetic force act to drive the arc and metallic arcing vapors associated therewith from between the electrodes towards said insulating portion, the metallic arcing vapors being deposited on the surrounding insulating portion in heaviest concentrations on a localized area of an interior portion of said insulating portion where the vector cross product of the lines of magnetic force and said arc current intersects said insulating portion, and a plurality of spaced baffles formed on said insulating portion and juxtaposed to said arc which arises between said electrode members and at least covering said localized area of said interior portion where the metallic arcing vapors are deposited in the heaviest concentrations, said baffles being shaped and oriented to shield a plurality of continuous annular areas of said insulating portion from said metallic deposits in a direction perpendicular to said axis said insulating portion being substantially formed of electrically insulating material and said baffles forming a plurality of spaced annular fins having a T-shaped cross section and formed entirely of electrically insulating material.

4,267,416

CONTACT ARRANGEMENT FOR VACUUM SWITCH

Irmo Paulus, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 778,266, Mar. 16, 1977, abandoned. This application Jul. 27, 1978, Ser. No. 928,689
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1976, 2613567
Int. Cl.[3] H01H *33/66*
U.S. Cl. 200—144 B 4 Claims



1. A contact for a vacuum switch including a pair of opposed contacts, each comprising a hollow body of revolution having an axis of revolution, said body of revolution having a plurality of slots extending in a spiral with respect to said axis of revolution; a solid annular contact seat at the base of said body of revolution forming a contact surface; and an electrical lead conductor connected to said body of revolution.

4,267,417

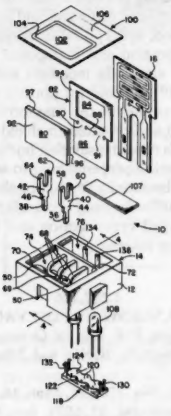
MEMBRANE KEYSWITCH

John A. Koepke, Mount Prospect, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jun. 9, 1980, Ser. No. 157,903
Int. Cl.[3] H01H *13/02, 13/70*
U.S. Cl. 200—159 B 10 Claims

1. A membrane switch comprising an electrically insulating housing having a top and a bottom, a first chamber with at least one walled cavity therein and a plurality of passageways in communication with said cavities which extend through said bottom of said housing, a thin, flexible membrane including a plurality of elongated legs each of which have an aperture therethrough, a plurality of unconnected electrically conductive patterns on a pattern area of said membrane, each pattern of which includes an elongated conductor strip which extends over one of said legs, a plurality of electrically conductive terminals each having a terminal end which is inserted into one

of said passageways so that said terminal end passes through an aperture in one of said elongated legs and projects through the bottom of said housing, the dimensions of said terminals being such that they are wedged into their associated passageways and the associated elongated leg is trapped between the walls



of the associated cavity and said terminal, a conductive plate in said housing, said flexible membrane being bent so as to position said pattern area of said membrane over said conductive plate and a spacer member having a window therein which is positioned between said pattern area and said conductive plate.

4,267,418

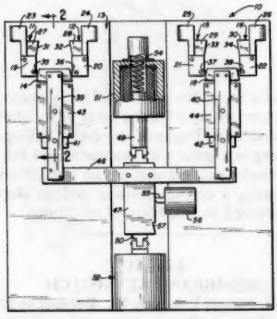
ELECTRIC SWITCH DEVICE

Ronald O. Brown, 333 Ozark Dr., Bolingbrook, Ill. 60439

Continuation-in-part of Ser. No. 839,192, Oct. 4, 1977, abandoned. This application Feb. 16, 1979, Ser. No. 12,909

Int. Cl.³ H01H *1/38*

U.S. Cl. 200—163 **2 Claims**



1. In an electrical switch device for handling large operating and surge currents, a first contact member defining a first planar contact surface, a second contact member defining a second planar contact surface, support means supporting said contact members for movement of said second contact member relative to said first contact member between an open position spaced therefrom and a closed position in which said first and second planar contact surfaces are in flush engagement in a plane at an acute angle to the direction of said relative movement, and actuating means for moving said second contact member between said open and closed positions, said contact surfaces being of a ductile metal and at least substantial portions thereof being very smooth and being in intimate contact in said closed position with said portions being such as produced by a very smooth surface-forming action on said contact surfaces during repeated movements from said open position to said closed position, said first and second contact members being substantially rigid, a third contact member supported by said support means in fixed relation to said first contact member, and cooperating with said second contact member to define third and fourth planar contact surfaces spaced apart in said open position of said contact member and in flush engagement with said closed position thereof, said third and fourth planar surfaces being at an acute angle to said direction of relative movement which is of the same magnitude as that of said first and second contact surfaces but in an opposite direction, equal and opposite transverse forces being applied to said contact member from impact of said second and fourth contact surfaces with said first and third contact surfaces so as to limit transverse movement of said second contact member, said support means and the relationship of said contact surfaces being further of such that said first and second planar surfaces are maintained at the same acute angle to said direction of movement at impact between said first and second planar surfaces to facilitate obtaining said very smooth surface-forming action for maintaining and enlarging the areas of said very smooth contact surface portions, said actuating means being operative to effect engagement of said first and second contact surfaces at a certain impact velocity and to apply a certain separating force between said contact members along said direction of movement, and said acute angle being on the order from five to eight degrees and being small enough to prevent separation of said contact surfaces from reverse direction rebound forces applied between said contact members at impact while being large enough to insure separation of said contact surfaces in response to application of said separate force.

4,267,419

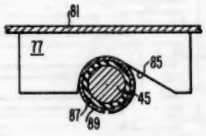
CIRCUIT BREAKER STRUCTURE WITH SHOCK ABSORBERS

Alfred E. Maier, Beaver Falls, and Walter V. Bratkowski, McKessport, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 30, 1979, Ser. No. 62,273

Int. Cl.³ H01H *3/60*

U.S. Cl. 200—288 **2 Claims**



1. A circuit breaker comprising:

(a) stationary contact means;

(b) movable contact means operable between open and closed positions of the stationary contact means;

(c) a frame;

(d) contact arm means for supporting the movable contact means and pivotally mounted for movement of the contacts between said positions;

(e) a circuit breaker operating mechanism releasable to effect opening and closing of said contacts;

(f) a cross bar operatively connected between the contact arm means and said mechanism and movable through an arc during opening and closing of the movable contacts;

(g) a stop plate mounted on the frame for stopping movement of the cross bar during opening of the contacts;

(h) shock absorbing means disposed in one of the stop plate and the cross bar for absorbing energy released when the cross bar moves to the open position of the contacts;

(i) said mechanism comprising toggle means including a toggle link connected to the cross bar;
(j) the stationary contact means comprising three laterally-spaced stationary contacts with corresponding movable contacts and contact-carrying arms;
(k) the cross bar extending between and being connected to the arms;
(l) spaced stop plates on the frame at locations between the locations of the stationary contacts; and
(m) the shock absorbing means comprises an elastic sleeve on the cross bar.

4,267,420

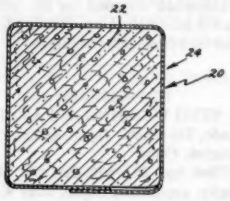
PACKAGED FOOD ITEM AND METHOD FOR ACHIEVING MICROWAVE BROWNING THEREOF

William A. Brastad, Minneapolis, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 910,245, May 30, 1978, abandoned. This application Oct. 12, 1978, Ser. No. 950,757

Int. Cl.³ H05B *6/80*

U.S. Cl. 219—10.55 E **12 Claims**



1. In combination with a food item capable of having its color changed or being crispened by thermal energy, said food item to be heated in a microwave oven, wrapping material conforming generally to the shape of said food item comprising a flexible dielectric substrate having a thin semiconducting coating thereon residing in a close proximal relation to a substantial surface portion of said food item, said thin semiconducting coating having the property of being able to convert a proportion of the microwave energy of a microwave oven into heat in the coating itself to thereby change the color or crispness of the surface of the food item while permitting the remainder of the said microwave energy to pass through the wrapping material to dielectrically heat the food item.

4,267,421

APPARATUS FOR THE SUCCESSIVE WELDING OF C-SHAPED, PRE-BENT, INTERLINKED CHAIN LINKS

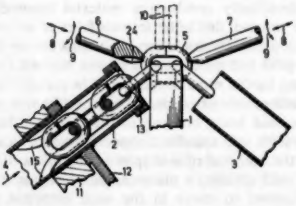
Karl-Julius Heppe, Cologne, Fed. Rep. of Germany, assignor to Meyer, Roth & Pastor, Cologne, Fed. Rep. of Germany

Filed Mar. 18, 1980, Ser. No. 131,549

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1979, 2912677

Int. Cl.³ B21L *3/02*

U.S. Cl. 219—51 **5 Claims**



1. Apparatus for the successive welding of C-shaped, pre-bent interlinked chain links forming a chain, comprising

a saddle for supporting a given chain link to be welded, said saddle having a trough for accommodating the back portion of said given chain link and first and second cup-shaped recesses at each end of said trough for accommodating the rounded portions of the two chain links of said chain following and leading said given chain link;

first and second guides positioned on either side of said saddle adjacent said first and second cup-shaped recesses, respectively, for guiding the chain chain links entering and leaving said saddle, respectively, said first and second guides each having a longitudinal axis inclined at an angle with respect to the axis of said trough, said first guide being pivotable about its longitudinal axis;

a chain sprocket having crossed slots secured to the end of said first guide adjacent the first cup-shaped recess of said saddle, said chain links passing through said crossed slots; and

first and second clinchers movably mounted adjacent said first and second guides and provided with claw-like recesses in their ends for gripping the rounded portions at each end of the chain link to be welded, said first clincher having a trough-shaped recess on the lower portion thereof adjacent its claw-like recess, the trough-shaped recess of said first clincher guiding the following link of said chain after said given link has been welded and rotated by the pivoting of said first guide about its longitudinal axis.

4,267,422

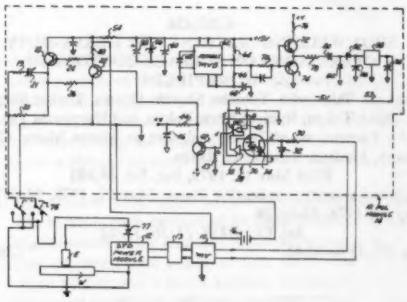
POWER SUPPLY CIRCUIT OF THE HIGH VOLTAGE TYPE FOR ELECTRICAL DISCHARGE MACHINING APPARATUS

Oliver A. Bell, Jr., Statesville; Randall C. Gilleland, Troutman, and Davey J. Chance, Concord, all of N.C., assignors to Colt Industries Operating Corp, New York, N.Y.

Filed Apr. 2, 1979, Ser. No. 26,049

Int. Cl.³ B23P *1/02*

U.S. Cl. 219—69 C **5 Claims**

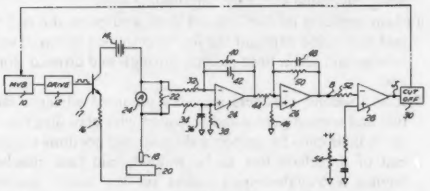


1. A high voltage machining power module for an electrical discharge machining power supply including a pulse generator having a triggering pulse output, comprising; a relatively large magnitude power source; an output electronic switch having its principal electrodes operably connected between said source and the gap for providing high voltage machining power pulses thereto; and an opticoupling stage connected intermediate said output of the pulse generator and said output switch for operating it to provide machining power pulses to the gap, said opticoupling stage including an input light emitting diode and an output photo diode, and a fast turn-on network for said output electronic switch connected in the circuit of said photo diode comprising in series an amplifier, a gate and a transistor connected intermediate said photo diode and said output electronic switch.

4,267,423
PROTECTION CIRCUIT FOR ELECTRICAL DISCHARGE MACHINING POWER SUPPLY

Oliver A. Bell, Jr., Statesville; Randall C. Gilleland, Troutman, and Davey J. Chance, Concord, all of N.C., assignors to Colt Industries Operating Corp, New York, N.Y.

Filed May 24, 1979, Ser. No. 41,766
Int. Cl.³ B23P *1/02*
U.S. Cl. 219—69 S **6 Claims**

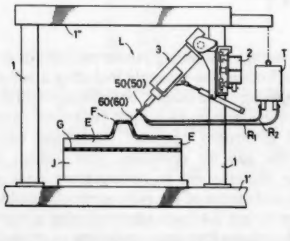


1. In a protection system for an electrical discharge machining power supply apparatus for machining a workplace by a relatively small tool electrode across a gap including a multivibrator, means for sensing gap current over a narrow range of acceptable values; an ammeter connected in the gap circuit; means for deriving a voltage signal representative of the gap current sensed comprising a resistor connected across said ammeter; an amplifier stage for amplifying said voltage signal; at least one integrator stage for integrating said amplified voltage signal; and a comparator stage; said comparator stage having one input from said integrator and the other input from a reference voltage; and a cutoff means connected to the output of said comparator and operable to reduce gap current responsive to the voltage signal being greater than the reference voltage signal.

4,267,424
SPOT WELDING MACHINE FOR HEAVY-DUTY OPERATIONS ON SURFACE CONTOURED WORKPIECES

Hirokazu Shimatake, Yamato; Shuichi Ogawa, Toyko; Shigeru Uchida, Tokyo; Ryuichi Nara, Tokyo, and Haruyoshi Takagishi, Yamato, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 17, 1979, Ser. No. 39,893
Claims priority, application Japan, May 22, 1978, 53-60725; May 22, 1978, 53-60726
Int. Cl.³ B23K *11/36, 37/02*
U.S. Cl. 219—86.41 **7 Claims**

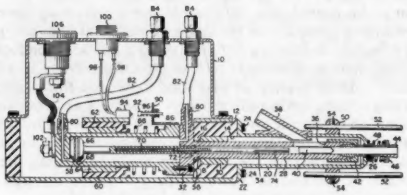


1. A spot welding machine comprising:
a pair of vertically spaced-apart parallel upper and lower guide rails;
means for supporting said guide rails a distance from the ground;
a slide member slidably mounted on said guide rails;
means for moving said slide member along said guide rails;
a first electrode tip electrically connected to a current source;
a robot arm structure having a housing pivotally mounted at a rearward end thereof on an upper pivot point of said slide member adjacent to said upper guide rail, an outer cylindrical shaft mounted movably in said housing along the longitudinal axis thereof, an inner shaft mounted in said outer shaft and rotatable about said longitudinal axis and axially movable with said outer shaft, first fluid operated telescopic means secured to said housing for axially moving said outer and inner shafts, second fluid operated telescopic means for rotating said inner shaft, and an electrode holder for holding said first electrode tip, said holder being axially movable with the axial movement of said outer and inner shafts and vertically swingable with the rotation of said inner shaft;
third fluid operated telescopic means pivotally connected between a lower pivot point of said slide member of said housing for pivoting said robot arm structure at a desired angular position on a vertical plane; and
a backing electrode disposed on the ground on which a workpiece is mounted to receive an electric current supplied from said first electrode tip.

4,267,425
STUD WELDING APPARATUS

Yoshiteru Kondo, Toyohashi, Japan, assignor to USM Corporation, Farmington, Conn.

Filed Apr. 30, 1979, Ser. No. 34,590
Claims priority, application Japan, May 9, 1978, 53/54843
Int. Cl.³ B23K *9/20*
U.S. Cl. 219—98 **4 Claims**



1. A stud welding apparatus including: a body housing; wall structure forming a gun housing secured to and insulated from the front end of said body housing and having an opening at the tip thereof; a spindle made of an electrically conductive material incorporated in said gun housing spaced apart and insulated from said gun housing wall, supported slidably in the longitudinal direction and having a hole penetrating therethrough in the axial direction and a side port at the front end thereof; a tubular member fitted to said wall of said gun housing and adapted to supply a stud to be welded to said side port; a stud feed port connected to a stud supply source; three legs made of an electrically conductive material secured in the insulated state around the outer circumference of said gun housing with a predetermined gap therebetween in front of said stud feed port and protruding forward beyond the tip of said gun housing by the same distance and in parallel with one another; a cylinder made of an electrically conductive material disposed inside said body housing in the insulated state and concentrically with said spindle, connected mechanically and electrically to the rear end of said spindle and allowed to slide together with said spindle; a piston slidably disposed in said cylinder and caused to move in the axial direction of said cylinder due to a pressure difference applied onto the front and back surfaces thereof; a push member extending forward from said piston and fitted slidably into said hole of said spindle; a collet made of an electrically conductive material fitted to the

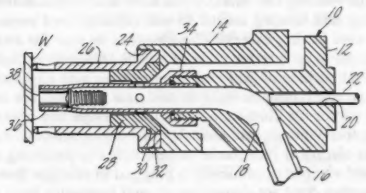
tip of said spindle, protruding outward beyond said opening at the tip of said gun housing and capable of receiving and supporting resiliently and firmly said stud to be welded when said stud is pushed forward by said push member of said piston; a spring device adapted to constantly push forward said cylinder and resiliently retract said spindle and hence, said cylinder, when said stud to be welded supported by said collet is pressed against a workpiece; a switch device actuated when said cylinder moves back to a predetermined position; a pressure feed conduit communicated with the inside of said cylinder at the front and back ends thereof and with a pressure fluid source; and electric control circuit means connected electrically to said legs, said cylinder and said switch device and adapted to control said stud supply source, said pressure fluid source and a welding current source in accordance with a predetermined sequence, said legs being interconnected into said electric control circuit means such that no welding current is allowed to flow to a stud supported by said collet unless a current flows simultaneously through said three legs.

4,267,426

AUTOMATIC STUD WELDING GUN WITH PERFORATED STUD COLLET

Lawrence G. Mallett, Rochester, Mich., assignor to USM Corporation, Farmington, Conn.

Filed Aug. 28, 1979, Ser. No. 70,402
Int. Cl.³ B23K *9/20*
U.S. Cl. 219—98 **1 Claim**



1. In combination with an automatic welding gun for end welding studs to a panel, having wall structure defining a conduit into which said studs are fed by gaseous pressure and means connecting said conduit with a source of studs and a source of gaseous pressure, a stud retaining collet comprising wall structure defining a tubular member having a large diameter portion of substantially constant cross section interconnecting with said conduit at one end thereof and into which said stud is fed by the gaseous pressure, said large diameter portion extending to a smaller diameter portion at the opposite end thereof for gripping a stud fed to the collet, and a plurality of circular openings formed in the large diameter portion of said collet wall structure and equally spaced about the circumference thereof for allowing gas flowing into said collet from said conduit to vent through said wall structure during the feed of a stud to said collet.

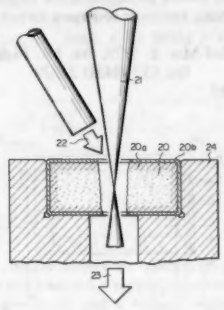
4,267,427

METHOD OF BORING A HOLE THROUGH A MAGNET MADE OF AN INTERMETALLIC COMPOUND

Hiroki Nomura; Masao Mafune, both of Kawagoe, and Masaru Koyanagi, Niiza, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Dec. 19, 1978, Ser. No. 970,951
Claims priority, application Japan, Dec. 27, 1977, 52-156431; Mar. 8, 1978, 53-026228; Mar. 11, 1978, 53-027957; Mar. 31, 1978, 53-037630
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 LL **7 Claims**

1. A method of forming a hole through a magnet made of an intermetallic compound, comprising the steps of impregnating the magnet with a nonmagnetic material of a metal having low melting point to form a reinforced region at peripheral portions of the magnet, and laser machining said magnet to form said hole.



4,267,428

CONTOURED WELDING ROD

George S. Kennedy, Box 445, Edgewater, Fla. 32032

Filed Jul. 25, 1979, Ser. No. 60,658
Int. Cl.³ B23K *35/06*
U.S. Cl. 219—145.1 **9 Claims**

1. A hand-held welding rod for forming a stringer bead to fill the lower portion of the gap lying between adjacent beveled end surfaces of an aligned pair of metal pipes or metal sheets having an upper and a lower surface, each of said beveled end surfaces intersecting the upper surface at an obtuse angle and the lower surface at an acute angle, said welding rod comprising:

a. an uncoated alloy upper section having first and second side surfaces each inclined at an angle to match the angle of inclination of the adjacent beveled end surfaces of said pipe or sheet, said upper section further including an upper surface and a lower surface, wherein the width of the lower surface of said upper section is less than about 30% of the width of the upper surface of said upper section; and

b. an uncoated alloy lower section having a lower surface, and an upper surface coupled to and having a width equal to the width of the lower surface of said upper section, wherein the spacing between the upper and lower surfaces of said lower section is less than about 30% of the spacing between the upper surface of said upper section and the lower surface of said upper section;

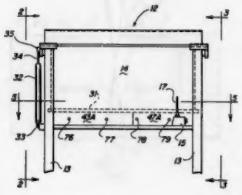
whereby the lower surface of said upper section fits within the gap between said adjacent pipes or plates causing the entire lower section of said rod to protrude below the lower surface of said pipe or sheet and whereby the mass of the lower section of said rod comprises less than about 25% of the mass of the entire rod while the mass of the upper section comprises more than about 75% of the mass of the entire rod.

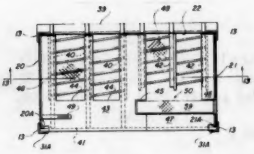
4,267,429

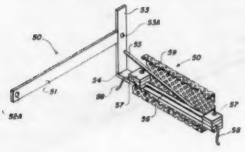
APPARATUS FOR ACTIVATING SHOE ASSEMBLY CEMENT

Thomas P. Fleer, Sunset Hills, and Reed E. Hannebaum, Oakville, both of Mo., assignors to Brown Group, Inc., St. Louis, Mo.

Filed Mar. 8, 1979, Ser. No. 18,650
Int. Cl.[3] H43D 25/20
U.S. Cl. 219—215 9 Claims







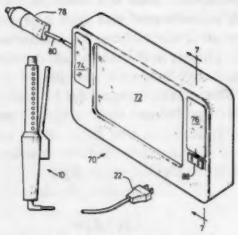
1. In apparatus providing an enclosure closed at least at the sides, back, and bottom, and open at the front through which are moved shoe outsoles and lasted uppers having thermoplastic cement applied to the surfaces thereof to be united to form finished shoes, the cement being flash activated by heat prior to uniting the outsole and a lasted upper, the improvement which comprises: means for supporting within the enclosure an outsole and a lasted upper with the cemented surfaces in positions to receive flash activating heat; separate sources of flash activating heat adjacent the positions of the outsole and lasted upper on said supporting means; operator protective shield means movable relative to the open front of said enclosure for shielding the source of heat from view, said shielding means being movable between shielding and nonshielding positions; and control means operatively connected to said separate heat sources and said protective shielding means, said control means including operation sequencing circuits connected to said separate heat sources and to said shielding means, and microprocessor means for scanning said circuits for selecting the sequence of operations of said separate heat sources and said shielding means and activating first means establishing a time delay between the operation of said shielding means and said separate sources of heat and activating a second means establishing a time delay in the turn on of said separate sources of heat at different time periods and the simultaneous turn off thereof, whereby the operation of said shielding means into shielding position occurs prior to the turn on of the first of said separate sources of heat and operation of said shielding means out of shielding position following the turn off of both of said separate sources of heat.

4,267,430

DUAL-VOLTAGE ELECTRIC HAIR CURLING APPARATUS AND VANITY CASE THEREFORE

John H. Downey, 1262 Don Mills Rd., Suite 88, Don Mills, Ontario, Canada (M3B 2W7)

Filed Oct. 6, 1978, Ser. No. 949,058
Int. Cl.[3] A45D 2/00; H05B 1/00
U.S. Cl. 219—222 3 Claims



1. An electrically heated hair curling apparatus for use in an automobile vehicle said hair curling apparatus comprising an electrically heated hair curler having an elongated barrel portion attached to a handle portion, electric cord means attached to said handle portion for connecting the curler to an electrical supply, a positive temperature coefficient electrical heating means operable at automotive voltage located in said barrel portion for heating the barrel portion, and connection means connecting said heating means to said electric cord means; a portable case having exterior clip means at its rear for attachment thereof to an interior visor of a vehicle, a mirror located on the front surface of said case remote from said clip means, and at least one luminaire light on said case front surface adjacent said mirror for illumination of a user thereof and operable at automotive voltage; said electric cord means terminating in a plug, an electrical receptacle on said case for receiving said plug of said electric cord means in plugged-in relation therein, an automotive cord set connected to said luminaire light and said electrical receptacle for supplying electric power thereto at automotive voltage, said cord set having an electric plug for insertion into a cigar lighter of said vehicle, and at least one storage compartment in said case accessible through an opening in a wall of said case for receiving and holding said hair curler, cord means and said automotive cord set in stored relation therein when not in use.

4,267,431

ELECTRIC HAIR CURLING APPARATUS HAVING A MOTOR-DRIVEN ROTATABLE HAIR WRAPPING MEMBER

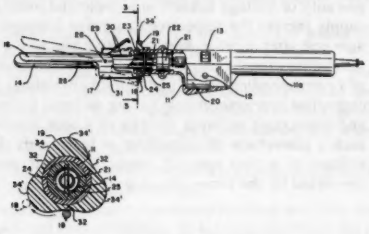
Randy L. Rick; Paul F. Mazzotta, and Cosimo D. Daiello, all of Reading, Pa., assignors to Shearpower International Corporation, Reading, Pa.

Filed Dec. 22, 1978, Ser. No. 972,356
Int. Cl.[3] H05B 1/00; A45D 1/02
U.S. Cl. 219—225 8 Claims

1. Curling apparatus comprising: a housing;
an elongate barrel extending from the housing, said barrel forming a mandrel about which hair may be wrapped to form a curl;
means mounting the barrel for rotation about its longitudinal axis relative to the housing;
an elongate wrapping member disposed along at least a portion of the barrel, said wrapping member being mounted on the barrel for rotation therewith and adapted for movement toward the longitudinal axis of the barrel to urge the hair against the barrel and for movement away from the longitudinal axis of the barrel to relax its engagement with the hair, said wrapping member having a shape that generally conforms to the shape of the barrel surface

and such that when the wrapping member is moved into contact with the barrel, the abutting surfaces are substantially in continuous contact;

means for unidirectionally rotating the barrel about its longitudinal axis and relative to the housing; and



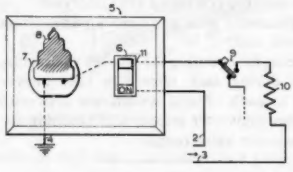
cooperating means on said housing and wrapping member for automatically and periodically moving the wrapping member toward and away from the longitudinal axis of the barrel, during each revolution of the barrel, in response to rotation of the barrel.

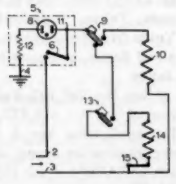
4,267,432

INSTALLATION CIRCUITRY FOR ELECTRIC WATER HEATERS

Paul E. Kiepe, 2141 First Ave. S., Payette, Id. 83661

Filed May 22, 1978, Ser. No. 907,990
Int. Cl.³ H05B 1/02
U.S. Cl. 219—328 **3 Claims**





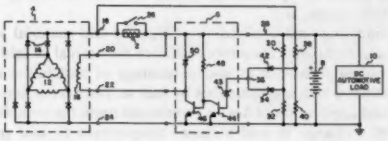
1. In an electric water heater energizing circuit comprising a resistive heater means, a three-wire electric supply system and thermostat means, a first leg of said three-wire system connected to a first contact means of said thermostat means, said thermostat means and said heater means serially connected in a second leg of said three-wire system with one end of said heater means electrically connected to a second contact of said thermostat means, and wherein the improvement comprises: a signal system means comprising switch means connected in said first leg and an electric signal system connected through a third leg of said system to said first contact means whereby the visible switch ON/OFF positions and the signal means provide a simple code to the hidden transient thermal and thermostat conditions within said water heater as an aid to economical power supply control through management of said hand operable switch means.

4,267,433

ELECTRICALLY HEATABLE WINDSHIELD HEATER CONTROL CIRCUIT

William H. Sahm, III, Syracuse, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 9, 1979, Ser. No. 83,177
Int. Cl.³ B60L 1/02; H02J 7/14
U.S. Cl. 219—491 **16 Claims**



1. A heater control circuit for automotive vehicles which have an electric alternator for supplying current to the vehicle battery and load circuit and a voltage regulator means for regulating the alternator voltage at the output terminal of said alternator, said control circuit comprising:

(a) series resistive heating means selectively coupled between said output terminal and the high voltage terminal of said battery,

(b) first control means responsive to the battery voltage at said high voltage terminal for supplying a first control signal to said voltage regulator means for regulating said alternator voltage within a first narrow band which when translated through said resistive heating means corresponds to a given voltage rating for said battery, and

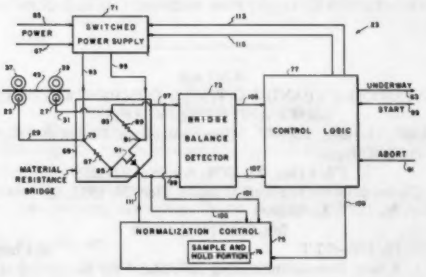
(c) second control means responsive to said alternator voltage for supplying a second control signal to said voltage regulator means for regulating said alternator voltage within a second narrow band which corresponds to a given power rating for said resistive heating means, whereby with said series resistive heating means connected in the circuit said heating means and said battery can be simultaneously energized under the control of a dual voltage regulation.

4,267,434

METHOD OF AND APPARATUS FOR HEAT PROCESSING PHOTOSENSITIVE MATERIAL

Gary R. Simpson, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 14, 1979, Ser. No. 48,483
Int. Cl.³ H05B 1/02; G01D 15/10
U.S. Cl. 219—499 **15 Claims**



1. The method of heating material to the extent which produces a preselected change in the electrical resistance of the material representing a change in the material temperature to a corresponding preselected temperature, comprising the steps of

determining the initial electrical resistance of the unheated material,

setting an electrical resistance means to a set resistance which represents a preselected percentage of said initial resistance, said percentage corresponding to a preselected temperature of said material,

applying heat to said material,

continuing to determine the prevailing electrical resistance of said material as that resistance changes as said material is heated,

comparing said prevailing resistance to said set resistance of said means, and

terminating said application of heat to said material when said compared resistances indicate the arrival of said prevailing resistance at said percentage of said initial resistance which is represented by said set resistance, whereby said application of heat is terminated upon the completion of a change in said material temperature to said preselected temperature.

4,267,435

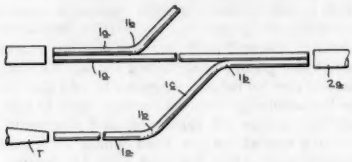
ELECTRIC RESISTANCE HEATING ELEMENT

Albert B. Best, Danbury, Conn., assignor to The Kanthal Corporation, Bethel, Conn.

Filed Aug. 23, 1979, Ser. No. 68,767

Int. Cl.[3] H05B *3/10*

U.S. Cl. 219—552 **6 Claims**



1. An electric resistance element including at least one loop made of refractory metal silicide resistance wire and comprising separate lengths of said resistance wire, said separate lengths of said resistance wire each having one end positioned next to one end of the other length of resistance wire with said ends facing in the same direction, both of said ends of said separate lengths of said resistance wire being butt welded to an end of a refractory metal silicide connecting wire, said end of said connecting wire facing in a direction opposite to said direction in which said ends of said separate lengths of said resistance wire face, said connecting wire having a diameter approximately equal to the both diameters of said separate lengths of said resistance wire, and said separate lengths of said resistance wire diverging from each other so as to form said loop.

4,267,436

INTERVAL-EXPANDING TIMER COMPENSATED FOR DRIFT AND NONLINEARITY

Mishio Hayashi, 1280-35, Minaminakamaru, Omiya-shi, Saitama-ken, Japan

Filed Dec. 22, 1978, Ser. No. 972,355

Claims priority, application Japan, Dec. 26, 1977, 52/155688; Dec. 26, 1977, 52/155690

Int. Cl.[3] H03K *17/28*

U.S. Cl. 235—92 T **16 Claims**

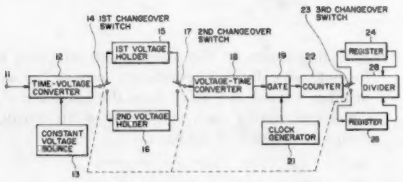
1. A time interval measuring instrument for measuring successive time intervals corresponding to respective ones of a plurality of successive pulses and providing a count output accordingly, comprising:

time-voltage converter means supplied with said plurality of successive pulses and having a conversion characteristic for converting each respective one of said plurality of successive pulses to corresponding respective voltages, said time-voltage converter means having an output for providing said converted successive pulses as respective successive conversion voltages;

a plurality of voltage holders, each having an input and an output;

first changeover switch means for connecting the output of the time-voltage converter means to the inputs of the plurality of voltage holders in a sequential order so as to supply thereto the respective successive conversion voltages one after another, said respective successive conversion voltages each being held in and provided as an output of a corresponding one of said plurality of voltage holders;

voltage-time converter means having an input for receiving and converting an input voltage to a time interval with such a conversion characteristic as to convert the input voltage to a time interval longer than that previously converted by the time-voltage converter means;



second changeover switch means for connecting the outputs of the plurality of voltage holders in a sequential order to the input of the voltage-time converter means, so as to cause conversion of said successive conversion voltages, provided as an output of said corresponding one of said plurality of voltage holders, to pulse waveforms representing respective converted time intervals;

generating means for generating clock pulses including first clock pulses; and

counting means for counting the number of first clock pulses generated during each respective time interval corresponding to each of said waveforms converted by the voltage-time converter means, said counting means providing the count value output.

4,267,437

EXPOSURE CONTROL DEVICE FOR A CAMERA

Nobuhiko Shinoda, Tokyo; Tadashi Ito; Fumio Ito, both of Yokohama; Yukio Mashimo, Tokyo, and Nobuaki Sakurada, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 765,192, Feb. 23, 1977, abandoned, which is a division of Ser. No. 606,572, Aug. 21, 1975, Pat. No. 4,037,233. This application Apr. 4, 1979, Ser. No. 27,108

Claims priority, application Japan, Aug. 27, 1974, 49/98660

Int. Cl.[3] G06M *3/02*; H03K *21/36*

U.S. Cl. 235—92 PE **3 Claims**

EXPOSURE TIME		APERTURE VALUE		FILM SENSITIVITY		OBJECT LUMINANCE		EXPOSURE VALUE	
SECOND (T)	Tv	APERTURE F VALUE (A)	Av	ASA (Sa)	Sv	FOOT-LAMBERTS (B)	Bv	A²/T	Ev
1	0	1.	1	3	0"	1	0	1	0
1/2	1	1.4	1	6	1"	2	1	2	1
1/4	2	2.	2	12	2"	4	2	4	2
1/8	3	2.8	3	25	3"	8	3	8	3
1/16	4	4.	4	50	4"	16	4	16	4
1/32	5	5.6	5	100	5"	32	5	32	5
1/64	6	8	6	200	6"	64	6	64	6
1/128	7	11	7	400	7"	128	7	128	7
1/256	8	16	8	800	8"	256	8	256	8
1/512	9	22	9	1600	9"	512	9	512	9
1/1024	10	32	10	3200	10"	1024	10	1024	10

1. An apparatus for reproducing a time interval corresponding to a digital information with an integral part to represent certain time intervals to change stepwise and a fractional part to represent intermediate time intervals between the respective certain time intervals, comprising:

(a) pulse supplying means for supplying a first pulse train

having a period of T/8, wherein T/8 is a time interval in seconds between two successive pulses;

(b) first means responsive to the first pulse train for providing a second pulse train having a pulse period corresponding to $2^m \times T8$, wherein m is an integer which corresponds to the content of the integral part of said digital information;

(c) counting means for counting the number of pulses of the second pulse train from said first means; and

(d) output means for producing a predetermined output signal while the counting means counts (8+n) times, wherein n is an integer and corresponds to the content of the fractional part of said digital information and wherein said counting means includes:

(1) a control register for memorizing a digital signal corresponding to said (8+n); and

(2) subtracting means connected between said first means and said control register to subtract one from the contents of said control register successively in synchronism with the second pulse train from said first means.

4,267,438

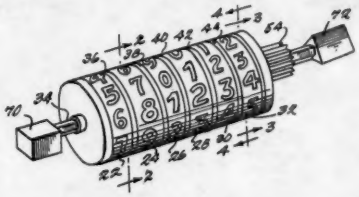
TAMPER-PROOF ODOMETER

Thomas D. Regan, 4534 43rd Pl., N.W., Washington, D.C. 20016

Filed Sep. 15, 1978, Ser. No. 942,803

Int. Cl.[2] G01C *22/00*

U.S. Cl. 235—96 **9 Claims**



1. An odometer comprising:

a shaft;

a plurality of digit wheels mounted in a group on said shaft for rotation to display a count and each having an outer digit displaying peripheral surface recessed surfaces bounding both sides of said outer surface with a plurality of gear engaging teeth extending around the periphery of one of said recessed surfaces and at least a single gear engaging tooth on the periphery of the other recessed surface, at least a given one of said digit wheels having weakened portions so that application of a force to separate said one wheel from an adjacent wheel causes said weakened portions of said given wheel to break;

a plurality of gear carrier plates each mounted on said shaft with each plate disposed between an adjacent pair of digit wheels and each engaging said shaft so as to be non-rotatable about said shaft;

a plurality of gears each mounted on one of said carrier plates for engaging both said teeth extending around the periphery of said one recessed surface of one of said pair of wheels and said at least one tooth on the periphery of the other recessed surface of the other of said pair of wheels so as to cause said other of said pair of wheels to advance a predetermined distance less than a complete rotation for each rotation of said one of said pair of wheels;

gear means fixedly mounted on said shaft engaging a digit wheel at one end of said group of digit wheels on said shaft for engaging and rotating that digit wheel so as to rotate each digit wheel a predetermined distance for each rotation of the digit wheel adjacent to it; and

means fixedly attached to the ends of said shaft for preventing removal of said digit wheels.

4,267,439

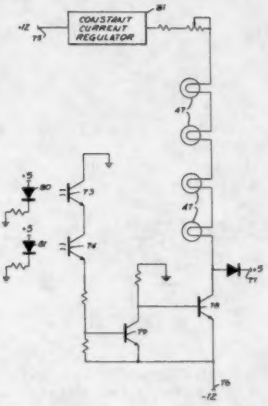
DOCUMENT READER LAMP LIFE EXTENSION SYSTEM

Robert J. Thomas, Spokane, and Michael Piekarski, Otis Orchards, both of Wash., assignors to Key Tronic Corporation, Spokane, Wash.

Filed Dec. 12, 1979, Ser. No. 102,663

Int. Cl.[3] G06K *7/14, 7/10*

U.S. Cl. 235—454 **3 Claims**



1. In an apparatus adapted to read visual indicia from the face of a document across an optical scan line:

a frame;

guide means on said frame for slidably guiding a document relative to the frame;

a viewing slot on said frame arranged transversely across the path of the visual indicia on the document face;

lamp means on said frame adjacent the viewing slot for illuminating the document face;

sensing means on said frame longitudinally adjacent the viewing slot for detecting the presence of a document adjacent thereto, said sensing means being alternately shifted between an operational state when a document is adjacent it and a normal nonoperational state;

and electrical switch means on said frame operably connected to the sensing means and to said lamp means for applying a first voltage drop across the lamp means when said sensing means is in its operational state and for alternately applying a smaller voltage drop across the lamp means when said sensing means is in its nonoperational state.

4,267,440

FOCUS DETECTING SYSTEM

Kiyoshi Kitai; Shinji Nagaoka, and Yuzuru Takazawa, all of Shikawatashi, Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1979, Ser. No. 24,440

Claims priority, application Japan, Apr. 12, 1978, 53-42997

Int. Cl.[3] G01J *1/20*

U.S. Cl. 250—201 **5 Claims**

1. A focus detecting system, comprising:

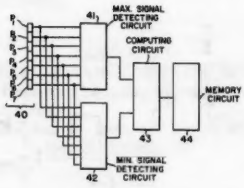
a plurality of light responsive elements arranged in a single array for generating a plurality of electrical output signals in response to light incident thereon;

first image forming means having a light path for forming a light image on said array of light responsive elements;

second image forming means having an adjustable light path for forming a second light image on said array of light responsive elements, wherein the adjustable light path of said second image forming means is a different light path

than the light path of said first image forming means and is adjustable for changing the second light image formed on said array of light responsive elements; and

detecting means receptive of and responsive to the plurality



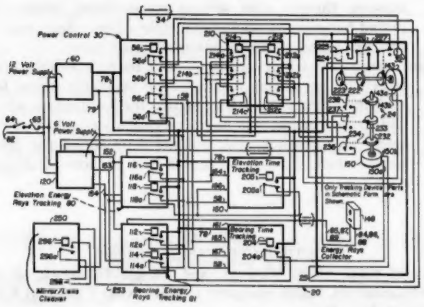
of electrical output signals from said array of light responsive elements for detecting when the first and second light images respectively formed by said first and second image forming means on said array of light responsive elements are the same.

4,267,441

ENERGY RAYS TRACKING DEVICE

Robert J. Monk, 4640 Country Creek Apt. 1255, Dallas, Tex. 75236

Filed Jul. 3, 1978, Ser. No. 921,198
Int. Cl.³ G01J *1/20*
U.S. Cl. 250—203 R **12 Claims**



1. An energy rays tracking device for automatic positioning control of a means for collecting energy rays having a geometric axis or plane, comprising:

a receiving means for receiving direct energy rays, said receiving means being rigidly attached to said energy rays collecting means;

a prime mover drivingly connected with said energy rays collecting means for maintaining alignment of direction of said geometric axis or plane with direction of said direct energy rays;

an energy rays tracking means responsive to said receiving means for automatically controlling power to the prime mover;

a timed tracking means responsive to said energy rays tracking means for controlling power to said prime mover for proximity tracking when said energy rays tracking means is not functioning due to energy rays being diffused, whereby said timed tracking means assures faster resumption of energy collection when direct energy rays again become receivable;

an energy rays sensitive element for automatically distinguishing when energy rays are substantially present or absent;

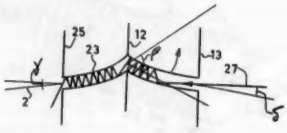
a power control means responsive to the energy rays sensitive element which automatically functions when energy rays are substantially absent to provide outputs which change over operations from an energy rays tracking sequence to a sequence whereby said energy rays collecting means is repositioned to be ready for the following period of tracking, wherein the presence of energy rays reverses the function of said power control means to initiate the following period of tracking.

4,267,442

ELECTRON MULTIPLIER DEVICE COMPRISING MICROCHANNEL PLATES WITH OPTICAL FEEDBACK SUPPRESSION FOR IMAGE INTENSIFIER TUBES

Jean-Claude Rosier, Paris, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 13, 1979, Ser. No. 66,136
Claims priority, application France, Aug. 21, 1978, 78 24255
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—207 **5 Claims**



1. An electron multiplier device of the type comprising two superposed microchannel plates exhibiting secondary electron emission, said plates each having a first end face and a second end face, the first end faces being adjacent each other, each of the microchannels defining an axis;

CHARACTERIZED IN THAT:

at least one plate comprises curved channels such that the angle between the axes of the channels of the two plates is at least approximately 25° at the first end faces of the plates, while the angle between the axes at the second end faces and a normal to the second end faces is at most 10°.

4,267,443

PHOTOELECTRIC INPUT APPARATUS

Arthur B. Carroll, St. Joseph; Vladeta D. Lazarevich, Bondville, and Mark R. Gardner, Champaign, all of Ill., assignors to Carroll Manufacturing Corporation, Champaign, Ill.

Filed Apr. 24, 1978, Ser. No. 899,260
Int. Cl.³ G01V *9/04*
U.S. Cl. 250—221 **27 Claims**

1. A photoelectric input device having a housing defining an opening,

a plurality of light sources supported by said housing in a row along one side of said opening,

a plurality of light sources supported on said housing in a row along an adjacent side of said opening,

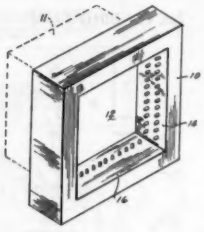
a plurality of photosensitive devices supported in a row along a third side of said opening, and

a second plurality of photosensitive devices supported on said housing in a row along the fourth side of said opening,

each of said light sources defining a beam with one of the photosensitive devices supported on the opposite wall of said opening, whereby said light sources and photosensi-

tive devices define two sets of beams each defining a surface extending between different pairs of opposite sides of said opening,

means for mounting said light sources and said photosensitive device on said housing to produce said sets of beams in two separate surfaces, spaced apart along the direction



normal to the plane of said opening, counting means for each of said sets for counting a number of interrupted beams in each set, and means for producing output signals indicating the number counted by each counter,

and means for sensing, independently, when each of said two sets of beams has one or more beams which is interrupted.

4,267,444

DEVICE FOR EXAMINING THE DEGREE OF FILLING OF A CIGARETTE

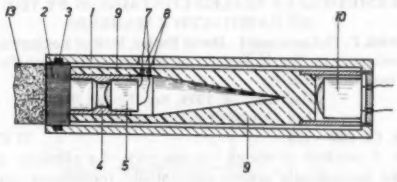
Hubert Bald, Gevelsberg, Fed. Rep. of Germany, assignor to Maschinenfabrik Alfred Schmermund GmbH & Co., Gevelsberg, Fed. Rep. of Germany

Filed Mar. 14, 1979, Ser. No. 20,396

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1978, 2813866

Int. Cl.³ G02B 5/16

U.S. Cl. 250—227 **6 Claims**



1. A device for examining the degree of filling of an end zone of a cigarette, comprising a light source, light transmitting means having an emitting surface adapted to be disposed in co-planar relationship to and to be brought into direct contact with an end of said cigarette to be examined and to apply light from said source thereto, light receiving means adapted to be brought into direct contact with the cigarette and having a receiving surface co-planar with said emitting surface and laterally spaced therefrom by a region substantially impermeable to said light, the light being reflected transversely across the end of the cigarette over the impermeable region from the emitting surface to the receiving surface, and evaluating means coupled to said receiving means and responsive to the reflectance of said end zone.

4,267,445

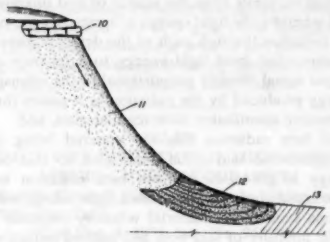
URANIUM PROSPECTING METHOD

Dale K. Cabbiness; Alfred B. Carel, and W. Dean Leslie, all of Ponca City, Okla., assignors to Conoco, Inc., Ponca City, Okla.

Filed Dec. 4, 1978, Ser. No. 966,536

Int. Cl.³ G01V 5/00; G01T 1/11

U.S. Cl. 250—255 **5 Claims**



1. A method of prospecting for radioactive material comprising:

(a) obtaining a plurality of samples from a prospective formation in a predetermined pattern;

(b) determining the natural thermoluminescent activity of said samples;

(c) irradiating said samples at a plurality of known levels;

(d) determining the thermoluminescent activity of said samples after each of said irradiations; and

(e) comparing the natural thermoluminescence of said samples against the thermoluminescence after said plurality of irradiations at known levels to determine the actual level of natural irradiation to which said samples have been exposed.

4,267,446

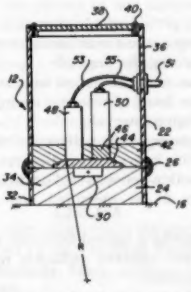
DUAL SCINTILLATION DETECTOR FOR DETERMINING GRADE OF URANIUM ORE

Robert Brown, Arvada, and Paul A. Proulx, Golden, both of Colo., assignors to Geoco, Inc., Denver, Colo.

Filed Apr. 3, 1979, Ser. No. 26,721

Int. Cl.³ G01V 5/00; G01T 1/20, 1/00

U.S. Cl. 250—255 **30 Claims**



1. A scintillation radiation detector comprising:

(a) a body means;

(b) a first scintillation radiation detector material, said material being sensitized to produce light energy whose intensity is directly proportional to the intensity of beta radiation;

(c) a second scintillation radiation detector material sensitized to produce light energy in direct proportion to the intensity of gamma radiation which has higher energy levels than said beta radiation, said second radiation scin-

tillation detector material being positioned on the opposite side of said first scintillation radiation material from a source of unknown radiation;

(d) said first scintillation material being configured in a thin cross section whereby the path traveled by said second radiation through said first material is relatively short;

(e) sensing means positioned adjacent each of said beta and gamma scintillation detector materials on the opposite side of said materials from the source of said unknown radiation whereby the light energy generated by the passage of the radiation through each of the detector materials will be converted from light energy to a separate electrical output signal directly proportional to the intensity of the energy produced by the radiation as it passes through its respective scintillation detector materials, and

(f) said beta radiation detector material being generally transparent to said gamma radiation so that only light energy is generated by said beta radiation with said gamma radiation only generated light energy within said gamma scintillation material whereby accurate readings of the intensity of said beta and gamma radiation can be determined so that the quantity of uranium ore present in an unknown sample can be determined.

4,267,447

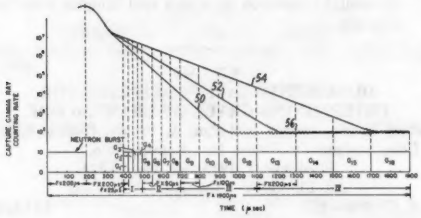
METHODS AND APPARATUS FOR MEASURING THERMAL NEUTRON DECAY CHARACTERISTICS OF EARTH FORMATIONS

Charles W. Johnstone, Houston, Tex., assignor to Schlumberger Technology Corp., Houston, Tex.

Division of Ser. No. 955,176, Oct. 26, 1978, Pat. No. 4,224,516. This application Mar. 14, 1980, Ser. No. 130,511

Int. Cl.[3] **G01V** *5/00*

U.S. Cl. 250—262 **21 Claims**



1. A method for providing a background-compensated measurement of radiation levels in an earth formation traversed by a borehole, comprising the steps of:

(a) irradiating an earth formation surrounding the borehole with a discrete burst of neturons during each of a succession of irradiation intervals;

(b) detecting, during a first detection time period within each irradiation interval, radiation resulting from a first type of interaction between said neutrons and earth formation elements to be measured and from background sources;

(c) detecting, during a second detection time period within each irradiation interval, radiation resulting from said background sources;

(d) measuring the average level of said first-detected radiation over a first measurement period encompassing a plurality of said irradiation intervals;

(e) measuring the average level of said background radiation over a second measurement period encompassing a greater plurality of said irradiation intervals than said first measurement period; and

(f) combining said first-detected radiation measurement and said background radiation measurement to compensate said first-detected radiation measurement for the presence within said first detection period of background radiation.

4,267,448

ION DETECTOR WITH BIPOLAR ACCELERATING ELECTRODE

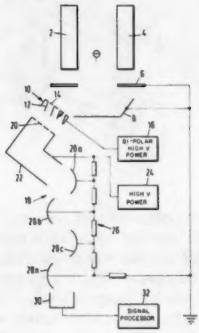
Karl Feser, Hamburg, and Curt Brunnee, Platjenwerbe, both of Fed. Rep. of Germany, assignors to Varian Mat GmbH, Bremen, Fed. Rep. of Germany

Filed Jun. 4, 1979, Ser. No. 45,144

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1978, 2825760

Int. Cl.[3] **B01D** *59/44*

U.S. Cl. 250—281 **11 Claims**



1. An apparatus for detecting ions generated by mass spectrometers, comprising: a conversion element which the ions strike, a secondary electron multiplier disposed after the conversion element in the direction of ion travel, said electron multiplier having an output that approaches ground potential, a high voltage source for the secondary electron multiplier, said conversion element comprising an accelerating electrode (**10**, **34**, **38**) disposed before and adjacent to the input of the secondary electron multiplier (**18**), and a separate, selective bi-polarity high voltage source (**16**) connected to the accelerating electrode, said accelerating electrode being impressed with a potential more negative than a first dynode of the secondary electron multiplier when detecting positive ions, and being impressed with a potential more positive than said first dynode when detecting negative ions.

4,267,449

TESTING THE INTEGRITY OF LIQUID CONTAINING HERMETICALLY SEALED CONTAINERS BY THE USE OF RADIOACTIVE MARKERS

Patrick P. DeLuca, and L. David Butler, both of Lexington, Ky., assignors to The University of Kentucky Research Foundation, Lexington, Ky.

Filed Aug. 14, 1979, Ser. No. 66,390

Int. Cl.[3] **G01T** *1/161;* **G09K** *3/00*

U.S. Cl. 250—303 **17 Claims**

1. A method of testing the integrity of a plurality of one piece hermetically sealed substantially transparent ampules containing a liquid therein for leakage comprising the steps of:

(a) immersing the ampules in an aqueous solution of a water soluble salt of a radionuclide and a dye,

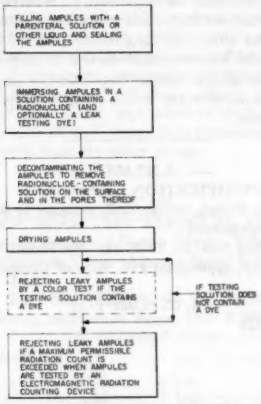
(b) applying pressure or a vacuum to the top of the solution containing the radionuclide and dye to generate a pressure differential between said solution and the liquid within the ampules at least once, and releasing said pressure or vacuum,

(c) removing the ampules from the solution or draining the solution from the container,

(d) decontaminating the ampules by removing any solution containing the radionuclide and dye adhering to the external surface thereof,

(e) color testing the ampules to detect faulty ampules into which dye has leaked,

(f) rejecting said faulty ampules, if any, and subsequently
(g) detecting electromagnetic radiation emanating from within the remaining ampules as a result of the presence therein of the radionuclide-containing solution which has leaked into the ampules, said radionuclide being selected


FILLING AMPULES WITH A PARENTERAL SOLUTION OR OTHER LIQUID AND SEALING THE AMPULES
IMMERSING AMPULES IN A SOLUTION CONTAINING A RADIONUCLIDE (AND, OPTIONALLY, A LEAK TESTING DYE)
DECONTAMINATING THE AMPULES TO REMOVE RADIONUCLIDE-CONTAINING SOLUTION ON THE SURFACE AND IN THE PORES THEREOF
DRYING AMPULES
REJECTING LEAKY AMPULES BY A COLOR TEST IF THE TESTING SOLUTION CONTAINS A DYE
IF TESTING SOLUTION DOES NOT CONTAIN A DYE
REJECTING LEAKY AMPULES IF A MAXIMUM PERMISSIBLE RADIATION COUNT IS EXCEEDED WHEN AMPULES ARE TESTED BY AN ELECTROMAGNETIC RADIATION COUNTING DEVICE

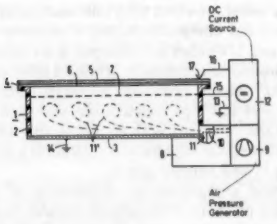
from the group consisting of ^{57}Co, ^{58}Co, ^{65}Zn, ^{85}Sr, ^{86}Rb, ^{59}Fe, ^{68}Ga, ^{188}Re, ^{68}Ge, ^{188}W and ^{99m}Tc, whereby the presence or absence of electromagnetic radiation from within the ampule respectively indicates a leak in said ampule or a satisfactory sealing of said ampule.

4,267,450

METHOD OF ELIMINATING BACKGROUND RESIDUAL CHARGE IN ELECTROPHOTOGRAPHIC IMAGE REPRODUCTION AND APPARATUS FOR CARRYING OUT SAID METHOD

Gottfried Lange, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 30, 1977, Ser. No. 856,006
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1976, 2658280
Int. Cl.³ G03G *13/00, 15/00*
U.S. Cl. 250—315.2 **2 Claims**



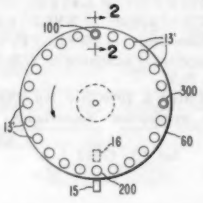
1. Apparatus for carrying out a method of eliminating the residual charge of a charge-image produced on a photoconductive layer associated with a conductive backing, wherein the charge image is treated with powder of electrically opposite polarity, characterized in that a voltage is applied to the conductive backing for the photoconductive layer during treating of the layer with development powder, which voltage is of a polarity opposite to that of the charge image and of a magnitude for substantially compensating the residual charge remaining as a residue after an initial uniform charge is reduced according to the maximum reduction attained during the exposure process, said apparatus being characterized in that there is provided a development apparatus comprising a development chamber (1), a contact (17) via which a DC voltage is connected for supplying voltage to the conductive backing (5) of the photoconductive layer (6), and a device (9 through 11) producing powder clouds for supplying powder to the photoconductive layer (6), said contact (17) supplying a voltage which is electrically opposite to the background residual charge and approximating the latter in magnitude, said apparatus being characterized in that a grid (7) is arranged in the chamber (1) at a small distance in front of and parallel to layer (6), said grid (7) being connected during operation of the apparatus to a voltage of approximately 1000 volts.

4,267,451

RADIOACTIVITY DETECTION IN HIGH-PRESSURE LIQUID CHROMATOGRAPHY

Alan C. Berick, Concord, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Dec. 4, 1978, Ser. No. 965,766
Int. Cl.³ G01T *1/00, 1/20*
U.S. Cl. 250—328 **5 Claims**



1. An apparatus for producing an on-line, real-time chromatogram of the concentrations of radioactive peaks present in a liquid sample separated on a liquid chromatographic column by using a scintillation material bonded to an inert substrate, comprising:

a carousel mechanism having a plurality of sample cells arranged thereon on a circumferential track thereof, said sample cells being packed with said scintillation material;

fluoresence detection means positioned adjacent said circumferential track so that as said carousel rotates, each of said sample cells is brought adjacent said detection means in stepwise fashion for detection of fluoresence produced by radiation in the portion of said sample in said cell;

means for filling said sample cells with said portion of said sample separated on said chromatographic column, said filling means being positioned adjacent said circumferential track upstream of said detection means; and

means for flushing said portion of said sample from said sample cells, said flushing means being positioned adjacent said circumferential track downstream of said detection means.

4,267,452

RADIOACTIVITY DISTRIBUTION DETECTION SYSTEM AND CRYSTAL DETECTOR ASSEMBLY

Johan A. Govaert, Peabody, Mass., assignor to Baird Corporation, Bedford, Mass.

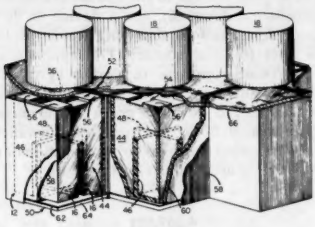
Filed Jul. 30, 1979, Ser. No. 61,984
Int. Cl.³ G01T *1/20*
U.S. Cl. 250—366 **10 Claims**

4. A detector assembly comprising:

(a) a housing having opened ends;

(b) a unitary body composed of a scintillation material disposed within said housing, said body formed with inwardly extending, perpendicular slots which divide one end of said body into four sensing heads, a portion of an opposite end of said body cut away to form four exit windows at said opposite end of said body, one of each said sensing heads in registration with one of each said exit

windows in one quadrant of said body, each said sensing head defining a scintillator; and



(c) a reflective material disposed within said slots, in said cut away portion of said body between said exit windows, and in the space between said housing and said body.

4,267,453

RADIATION DETECTION DEVICE HAVING REFLECTIVE COVER LAYERS OF $BASO_4$ INCORPORATED IN ACRYLIC VARNISH

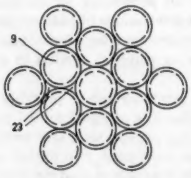
Arnoldus M. C. Kieboom, and Nicolaas P. Dedding, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 8, 1979, Ser. No. 18,495

Claims priority, application Netherlands, Mar. 17, 1978, 7802916

Int. Cl.³ G01T *1/20*

U.S. Cl. 250—368 **12 Claims**



1. A radiation detection device comprising scintillation means for providing scintillation radiation in a wavelength range between shortwave visible radiation and ultraviolet radiation, means for recording said scintillation radiation, and means for propagating said scintillation radiation having surface areas provided with a cover layer of $BaSO_4$ incorporated in acrylic varnish for reflecting said scintillation radiation.

4,267,454

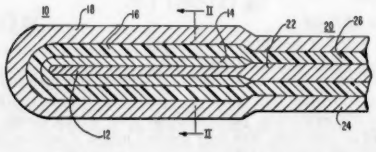
SELF-POWERED RADIATION DETECTOR WITH CONDUCTIVE EMITTER SUPPORT

Kerwin C. Playfoot; Richard F. Bauer, both of Horseheads, N.Y., and Norman P. Goldstein, Murrysville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 27, 1978, Ser. No. 919,572

Int. Cl.³ G01T *1/24, 3/00*

U.S. Cl. 250—370 **6 Claims**



1. A swage-formed elongated, self-powered radiation detector of the type wherein an electrical signal is generated as a function of the incident radiation flux interacting with insulatingly spaced coaxial conductors having differing radiation interaction characteristics, with the more radiation interactive conductor comprising a central emitter electrode and the less radiation interactive conductor comprising a tubular coaxial collector electrode with highly compacted insulating material between the electrodes, the improvement wherein the emitter electrode is a tubular body, and a ductile conductive center wire is disposed along the longitudinal axis of the detector within the tubular emitter electrode and in intimate electrical contact with the tubular emitter electrode as a result of repetitive swaging of the detector which compressively reduces the detector diameter.

4,267,455

PURIFICATION APPARATUS

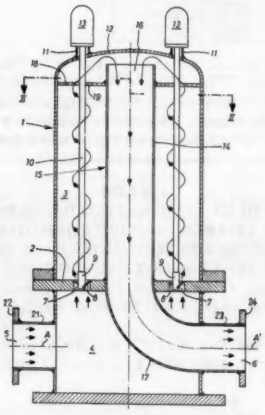
Hans U. Keller, Zürich, Switzerland, assignor to Katadyn Produkte AG, Switzerland

Filed Nov. 21, 1979, Ser. No. 96,601

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1978, 2851013

Int. Cl.³ C02F *1/32*

U.S. Cl. 250—431 **6 Claims**



1. In a purification apparatus comprising UV-tubes for the purification of a flowing medium such as water, which apparatus comprises a vessel provided with inlet and outlet openings for said medium and comprises further a centrally arranged tube, whereby said UV-tubes are arranged in an annular space of said vessel around said centrally arranged tube and extend parallel thereto, which centrally arranged tube extends through said vessel and is provided at one end with an outlet aperture and at the other end with an inflow aperture for said medium and is flowed through by said medium in a direction of flow prevailing in said annular space,

an improvement comprising the distribution of said UV-tubes along a plurality of concentric circular lines extending in said annular space, whereby each circular line has a different radius, whereby each said UV-tubes is supported by one of its ends in inlet ports for said medium in a wall of said vessel adjacent said inlet opening and by the other of its ends located adjacent to said inflow aperture in a wall of said vessel arranged at a distance from said inlet opening, and whereby said outflow aperture of said tube acting as discharge tube for the purified medium forms said outlet opening of said vessel,

said UV-tubes being supported by the agency of guide vanes in said inlet ports, which guide vanes generate a circulation of the inflowing medium around said respective UV-tubes,

there being provided means for a local controlling of the flow speed of said medium across the cross-section of said annular space adjacent said inlet opening of said discharge tube,

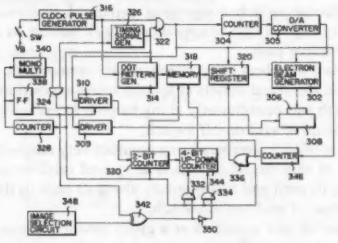
an intermediate plate being mounted to the end of said discharge tube and bridging the annular cross-section between the outer wall of said vessel and said discharge tube, which intermediate plate comprises through holes which are aligned with said inlet ports in said wall of said vessel adjacent said inlet opening, which said inlet ports and said through holes are peneterated by said UV-tubes and are, furthermore, groupwise arranged along coaxial circular lines having differing radiuses relative to the center of said vessel, and wherein each group of said through holes of said intermediate plate comprise a diameter differing from the other groups.

4,267,456

ELECTRON BEAM TYPE EXPOSURE APPARATUS

Yutaka Hidai, Kodaira, and Nobuo Okuda, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 30, 1979, Ser. No. 98,804
Claims priority, application Japan, Dec. 7, 1978, 53-150557
Int. Cl.³ H01J 37/00
U.S. Cl. 250—492 A **5 Claims**



1. An electron beam type exposure apparatus comprising:

a table for carrying a workpiece;

memory means for storing dot pattern data corresponding to a dot pattern to be drawn on the workpiece in the unit of words, each of said words being formed of a plurality of dot data and an N number $N \geqq 2$) of words constituting dot pattern data corresponding to one scanning line;

read control means for reading the dot pattern data out of the memory means in the unit of words;

data conversion means for converting words read out of the memory means into serial dot data;

electron beam generator means for emitting electron beams modulated in accordance with the serial dot data delivered from the data conversion means;

first scanning means for scanning the workpiece in a first direction by electron beams issued from the electron beam generator;

second scanning means for moving the workpiece relatively to the electron beam generator in a direction perpendicular to the first direction;

scanning signal generator means for supplying the second scanning means with a signal instructing the direction in which the workpiece is moved relatively to the electron beam generator means;

image selection means for judging whether a pattern to be drawn on the workpiece represents a regular or mirror image and producing a signal corresponding to the selected one of the regular and mirror images; and

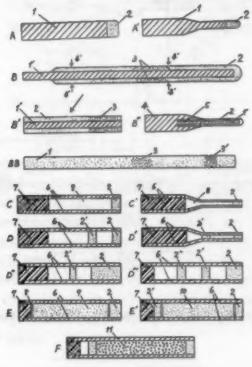
control signal generator means which, upon receipt of output signals from the image selection means and scanning signal generator means, supplies the read control means with a control signal having a first or second logic level, thereby changing the order in which words are read out of the memory means.

4,267,457

SAMPLE HOLDING ELEMENT FOR MASS SPECTROMETER

Yuzo Nakagawa, Suita; Kouji Iwatani, Amagasaki, and Tetsuro Kadono, Neyagawa, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Oct. 12, 1978, Ser. No. 950,697
Claims priority, application Japan, Oct. 20, 1977, 52-126455
Int. Cl.³ H01J 29/02
U.S. Cl. 250—522 **21 Claims**



1. A sample holding element for use in mass spectrometry which comprises a porous and gas-permeable aggregate of at least one skeletal ingredient of finely divided inorganic substance having refractory and electrical-insulating properties selected from the group consisting of glass, ceramic material and chromatographically-active adsorbent with a void ratio ranging from 15% to 70%.

4,267,458

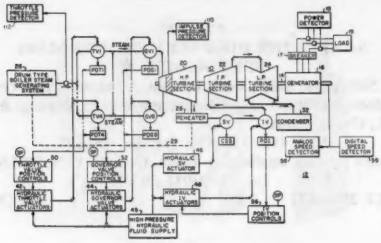
SYSTEM AND METHOD FOR STARTING, SYNCHRONIZING AND OPERATING A STEAM TURBINE WITH DIGITAL COMPUTER CONTROL

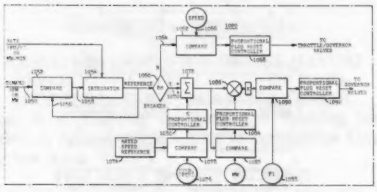
Robert Uram, East Pittsburgh, and Theodore C. Giras, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 247,877, Apr. 26, 1972, abandoned, which is a continuation-in-part of Ser. No. 247,440, Apr. 25, 1972, abandoned, which is a continuation-in-part of Ser. No. 246,9 00, Apr. 24, 1972, abandoned. This application Oct. 23, 1973, Ser. No. 408,962
Int. Cl.² H02P 9/04
U.S. Cl. 290—40 R **15 Claims**

1. A digital electrohydraulic control system for a steam turbine having at least two throttle valves and a plurality of downstream governor valves, said control system comprising an automatic digital control for generating valve position signals to operate the valves and control the turbine speed and load in response to predetermined input signals, a manual backup control for generating control signals to operate the valves for speed and load control when the automatic control is nonoperational, said automatic control including means for generating a throttle valve test select signal, means for digitally generating at least one test signal for closing the governor valve or valves downstream from a throttle valve selected for test, means for generating signals to close and reopen the test throttle valve when the downstream governor valves are closed, means for enabling the governor valves to be reopened

after the throttle valve test, and means for disabling said test closing signal generating means from operating if said backup





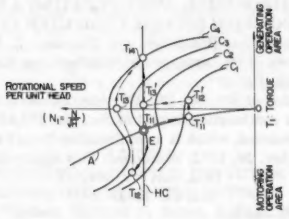
control is operating the valves when a throttle valve test selection is made.

4,267,459

METHOD OF OPERATING A HYDRAULIC TURBINE OR A PUMP-TURBINE

Toshiaki Yokoyama, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 25, 1979, Ser. No. 42,346
Claims priority, application Japan, May 26, 1978, 53-63732
Int. Cl.³ F02N *11/04*
U.S. Cl. 290—52 **7 Claims**



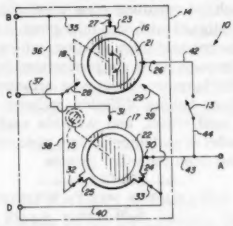
1. A method of operating a hydraulic turbine-generator machine in a power system in which, when the hydraulic turbine is operated so as to shift the load from the watered condition at guide vanes closed to the generating operation area in a condition that the runner rotates in the turbine rotating direction, the hydraulic machine is temporarily disconnected from the electric power system thereby to decrease the revolution per minute and to allow the load to smoothly shift from the motoring operation to the power generation operation at the decreased speed, and under this condition, the guide vane is gradually opened to increase the speed and set the revolution per minute to a fixed value, and then the hydraulic machine is recoupled with the electric power system for gaining the load.

4,267,460

WALL SWITCH FOR CONVENIENCE OUTLETS

Harry D. Habighorst, 14601 N. 25th St., Phoenix, Ariz. 85032

Filed Dec. 17, 1979, Ser. No. 104,312
Int. Cl.³ H02J *4/00, 3/00*
U.S. Cl. 307—38 **7 Claims**



1. A switch assembly for connecting at least two spaced electrical outlets to a power source with one of them being selectively connected to the power source through an on-off switch comprising:

an on-off switch having a pair of terminals, one of which is connected to the power source,

a selector switch,

said selector switch comprising a pair of juxtapositioned axially aligned disc like members, each having an arcuate conductive path,

one of said members being conductively connectable to each of said electrical outlets at spaced rotative positions along its path and continuously along its path to said one of said terminals of said on-off switch,

the other of said members being conductively connectable to each of said electrical outlets at spaced relative positions along its path and continuously along its path to the other terminal of said on-off switch,

the other of said members at a given position connecting a selected one of the electrical outlets through said other terminal of said on-off switch and when in another given position connecting the other electrical outlet through said other terminal of said on-off switch while said one of said members selectively connects the non-selected outlet to said one of said terminals of said on-off switches, and

means for rotating said members in unison for selectively connecting one or another of said electrical outlets through said on-off switch to the power source.

4,267,461

ARRANGEMENT FOR SUPPRESSING HIGH FREQUENCY CURRENTS IN BEARINGS OF SHAFTS

Hans-Christian Grassmann, Igelsdorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

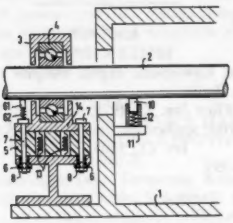
Filed Mar. 30, 1978, Ser. No. 891,895
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1977, 2717593
Int. Cl.³ H03H *1/00*
U.S. Cl. 307—105 **12 Claims**

1. An arrangement for suppressing high frequency currents in bearings of shafts in high frequency treating apparatus with operating frequencies above 10 kHz, the bearing being located outside the treatment apparatus housing and mechanically connected to the housing of the treatment apparatus, said bearing disposed in a housing and exhibiting a capacitive impedance between the shaft and its housing and the bearing shaft exhibiting an inductive impedance at said frequencies, comprising:

(a) a further impedance connected in series with the bearing impedance between the bearing housing and the housing of the treatment chamber, the sum of said further impe-

dance and the impedance of said shaft being great in comparison to the bearing impedance; and

(b) an additional impedance inside the treatment chamber



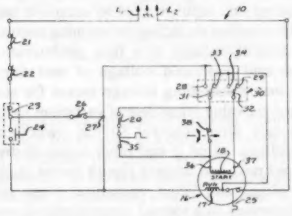
connected between the shaft and the housing of the treatment chamber, the value of said additional impedance being low in comparison to said capacitive bearing impedance.

4,267,462

CONTROL CIRCUIT FOR A COMPACTOR

Richard N. Frisbie, Boyle County, Ky., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 26, 1978, Ser. No. 972,658
Int. Cl.³ H01N *35/00*
U.S. Cl. 307—119 **8 Claims**



5. In a refuse compactor having a ram, a receptacle for holding refuse, means including a reversing electric motor for moving the ram from a retracted position into the receptacle to compress the refuse therein to apply thereto a maximum preselected pressure, and sensing means for sensing a tilted condition of the receptacle, the improvement comprising

means for plug reversing the motor as a result of said sensing means sensing a tilted condition of the receptacle prior to the compaction of the refuse to said maximum pressure for automatically returning the ram to the retracted position, said sensing means comprising a tilt-switch and said compactor further including a top limit switch in series with said tilt switch for preventing such plug reversal of the motor until the ram has moved from the retracted position.

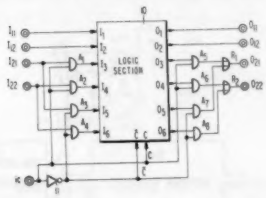
4,267,463

DIGITAL INTEGRATED CIRCUIT

Hiroshi Mayumi, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Dec. 15, 1978, Ser. No. 969,891
Claims priority, application Japan, Dec. 15, 1977, 52-151307
Int. Cl.³ H03K *19/20*
U.S. Cl. 307—445 **15 Claims**

1. A digital integrated circuit including a logic section having an operation mode and a test mode of operation, said logic section comprising a plurality of inputs and a plurality of outputs and at least one mode control input, the logical function of said logic section being switched between said operation mode and said test mode by application of a control signal to said control input, said integrated circuit further including a plurality of input terminals fewer in number than the number of inputs to said logic section, a plurality of output terminals fewer in number than the number of outputs from said logic section, at least one pair of first AND gates having corresponding inputs connected in common with one of said input terminals and respective outputs connected to different ones of said logic section inputs, at least one pair of second AND gates having corresponding inputs respectively connected to different ones of said logic section outputs, an OR gate connected to logically combine the outputs of said at least one pair of second AND gates and supply the output to one of said output terminals, and an inverter connected to receive said control signal and provide an inverted control signal output, said control signal being provided as an input to one of the AND gates of each of said first and second pairs of AND gates while said inverted control signal from said inverter being provided as an input to the other one of the AND gates of said first and second pairs of AND gates.

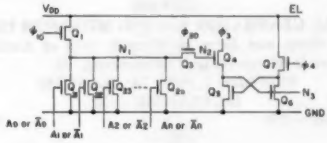


4,267,464

DECODER CIRCUIT

Yoshihiro Takemae, Kawasaki, and Masao Nakano, Tokyo, both of Japan, assignors to Fujitsu Fanuc Limited, Japan

Filed Dec. 13, 1978, Ser. No. 968,990
Claims priority, application Japan, Dec. 30, 1977, 52-158437
Int. Cl.³ H03K *19/017, 19/096*; G11C *8/00*
U.S. Cl. 307—463 **10 Claims**



1. A decoder circuit, connected to a power supply line having a power supply source voltage V_{DD}, comprising:

a charge-up transistor for maintaining the content of an input address signal;

a power supply switching transistor, operatively connected to said charge-up transistor, for controlling a charge-up current which is supplied to said charge-up transistor;

a predetermined number of selection transistors which are connected at a connection node between said charge-up transistor and said power supply switching transistor, said selection transistors enabling the selection of an output word line;

a bootstrap transistor which is connected at an opposite side of said connection node with respect to said charge-up transistor;

a first clock pulse generating circuit which generates first clock pulses for driving said power supply switching transistor, and;

a second clock pulse generating circuit which generates second clock pulses, having a maximum potential level higher than power supply source voltage V_{DD}, for driving said charge-up transistor.

4,267,465

CIRCUIT FOR RECHARGING THE OUTPUT NODES OF FIELD EFFECT TRANSISTOR CIRCUITS

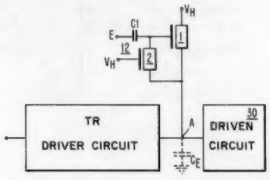
Werner Haug, Boeblingen; Joerg Gschwendtner, Esslingen, and Robert Schnadt, Boeblingen, all of Fed. Rep. of Germany, assignors to IBM Corporation, Armonk, N.Y.

Filed Jan. 15, 1979, Ser. No. 3,164

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1978, 2824727

Int. Cl.³ H03K *5/00, 3/26*

U.S. Cl. 307—238.3 **4 Claims**



1. A circuit for recharging the input capacity of a circuit connected to the output of an FET driver circuit comprising:

a first FET having a source electrode for supplying current to recharge the input capacitance connected to the output node of the driver circuit, a drain electrode connected to an operating voltage source, and a gate electrode connected to one electrode of a capacitor whose other electrode is connected to a periodic pulse source,

a second FET having its source connected to said source of the first FET, a drain electrode connected to the gate of the first FET, and a gate electrode connected to the operating voltage source,

said second FET sensing the potential at the source electrode of the first FET and transferring said potential to the gate of said first FET when the output node of the driver circuit is at a low potential with respect to the operating voltage to prevent current flowing through the first FET.

4,267,466

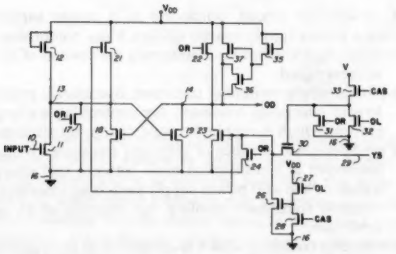
SIGNAL GENERATOR HAVING MINIMUM DELAY

Roger I. Kung, and Jerry D. Moench, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 5, 1979, Ser. No. 17,746

Int. Cl.³ H03K *3/26*

U.S. Cl. 307—279 **9 Claims**



1. A signal generating circuit to generate an output signal in response to an input signal and having a first and a second voltage terminal wherein the second terminal can serve as a reference for the first terminal, comprising: a first inverter for receiving the input signal; a cross coupled latch coupled to the first inverter and having an output for providing the output signal; a pull-up means coupled to the output to pull-up the output; a controllable load device coupled to an input of the cross coupled latch; a controllable discharging means for discharging the output upon command; and a control means for controlling the controllable load device and the controllable discharging means.

4,267,467

TIMER CIRCUIT

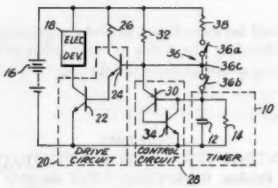
Keizo Tsukada, Kawaguchi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 23, 1979, Ser. No. 5,793

Claims priority, application Japan, Jan. 25, 1978, 53-6835

Int. Cl.³ H03K *17/292*

U.S. Cl. 307—597 **13 Claims**



1. A timing circuit for completing an electric circuit from a direct current source which generates a voltage of a potential level which may vary with time to an electric device comprising: drive means having an input and being responsive to a control voltage at said input thereof to complete said electric circuit, said drive means including maintaining means for maintaining said control voltage at a first predetermined value different from said generated voltage of said direct circuit source, timer means including storage means for storing said first predetermined value regardless of variations in the level of voltage from said direct current source, switch means for permitting a voltage stored in said timer means to discharge at a predetermined rate, and control circuit means controlled by said stored voltage and being operative, when said stored voltage has decreased to a second predetermined value lower than said first predetermined value, to change said control voltage to a value which causes said drive means to interrupt said electric circuit.

4,267,468

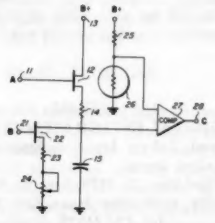
TEMPERATURE SENSING CIRCUIT

Stephen E. Hilliker, Chandler, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 23, 1979, Ser. No. 32,031

Int. Cl.³ H03K *3/26*

U.S. Cl. 307—310 **5 Claims**



1. In an electrical circuit for producing an output signal proportional to temperature and having four arms connected in a bridge configuration wherein a first arm comprises a nonlinear temperature sensing element, a source of voltage is connected across one diagonal of said bridge, and a compari-

son means is connected across the other diagonal, the improvement comprising:

a second arm, not in series with said first arm, comprising capacitor means;

switch means in a third arm, in series with said second arm, for selectively charging said capacitor; and

said comparison means comprises voltage comparison means for producing an output signal indicative of the temperature of said sensing element.

4,267,469

SOLID-STATE IMAGING DEVICE HAVING A CLAMPING CIRCUIT FOR DRAWING OUT EXCESS CHARGE

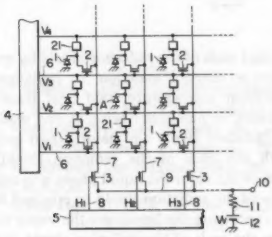
Shinya Ohba, Kokubunji; Iwao Takemoto, Kodaira; Masaaki Nakai, Hachioji; Haruhisa Ando, Kokubunji, and Masaharu Kubo, Hachioji, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 16, 1979, Ser. No. 66,880

Claims priority, application Japan, Aug. 17, 1978, 53-111974[U]

Int. Cl.³ H03K *3/42;* **H01L** *29/78, 27/14, 31/00*

U.S. Cl. 307—311 **8 Claims**



1. In a solid-state imaging device having a plurality of photo elements which are arrayed in a horizontal (row) direction and a vertical (column) direction; vertical switching elements which correspond to the respective photo elements; a first line which connects in common, output terminals of the vertical switching elements existent on an indentical column; horizontal switching elements which are connected to the first lines; an output line which connects in common, output terminals of said horizontal switching elements; a second line which connects in common, control terminals of the vertical switching elements existent on an identical row; a horizontal scanning circuit which impresses horizontal scanning pulses on control terminals of said horizontal switching elements; and a vertical scanning circuit which impresses vertical scanning pulses on said control terminals of said vertical switching elements through the second lines; a solid-state imaging device comprising the fact that each of the photo elements is additionally provided with a clamping circuit for drawing out excess charges, an output terminal of which is connected to the second line of a succeeding stage.

4,267,470

ROTATIONAL ANGLE DETECTING APPARATUS

Kazuhiko Kawakami, and Noboru Sugiura, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 27, 1979, Ser. No. 15,651

Claims priority, application Japan, Mar. 1, 1978, 53/22121

Int. Cl.³ H03K *5/26*

U.S. Cl. 307—515 **9 Claims**

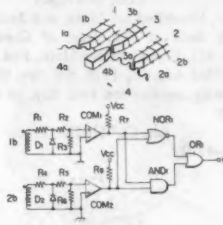
1. A rotational angle detecting apparatus comprising:

(a) a rotary disc having at least one protrusion provided at the periphery of the disc;

(b) a pick-up assembly for sensing a rotating position of the protrusion to produce an alternating signal in synchronism with the rotation of the disc;

(c) an integration circuit for producing an integration of the alternating signal with time;

(d) a level detector for sensing the integration signal thus obtained above a predetermined threshold level to produce a first rectangular wave signal occuring when the integration signal is over in level the predetermined threshold level;



(e) a polarity detector for sensing one of positive and negative polarities of the alternating signal to produce a second rectangular wave signal occuring when the alternating voltage is in the sensed polarity; and

(f) a logic circuit coupled to both the level detector and the polarity detector to receive the first and second rectangular wave signals for producing an AND logic signal therebetween.

4,267,471

LINEAR INDUCTION MOTOR

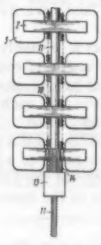
Alexandr D. Popov, pereulok Rynochny, 44; Vladimir A. Solomin, ulitsa Dachnaya, 14, kv. 31, both of Rostov-na-Donu, and Dmitry A. Zvezdunov, ulitsa Estonskaya, 248-b, Bataisk, all of U.S.S.R.

Filed Dec. 13, 1978, Ser. No. 968,726

Claims priority, application U.S.S.R., Mar. 1, 1978, 2584449

Int. Cl.³ H02K *41/02*

U.S. Cl. 310—13 **3 Claims**



1. A linear induction motor comprising:

an inductor;

a multiphase concentrated winding of said induction having a plurality of pole pairs;

a plurality of spaced transversely laminated cores comprising said plurality of pole pairs and defining a magnetic circuit of said inductor, each of said cores including a yoke provided with a hole and legs interconnected by said yoke;

a spring located between each pair of adjacent ones of said transversely laminated cores;

a rod passing through said holes and said springs;

means coupled to said rod for regulating the spacing between said cores such that the number of pole pairs of the multiphase concentrated winding is maintained constant;

a secondary element relative to which said inductor is moved;

a magnetically conductive base of said secondary element; and

an electrically conductive member disposed on said magnetically conductive base.

4,267,472

SINGLE PHASE STEPPING MOTOR, PARTICULARLY FOR CLOCKS

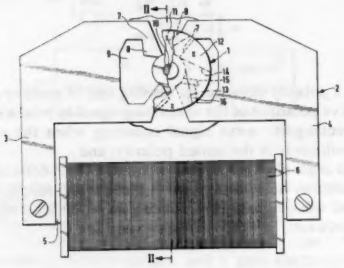
Roland Sudler, Frankfurt am Main, and Jean-Francois Schwab, Schwalbach, both of Fed. Rep. of Germany, assignors to Quarz-Zeit AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 21, 1978, Ser. No. 935,662

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 2738299

Int. Cl.³ H02K *37/00*

U.S. Cl. 310—49 R **3 Claims**



1. A single phase stepping motor, particularly for clocks, comprising

a rotor having a disc-like axially magnetized permanent magnet having face sides facing in axial directions and with a number of rotor poles,

a stator made of at least two stator parts connected with one another via a bridge part carrying an excitation winding, each said stator part on its free end has a smaller number (in comparison to the number of rotor poles) of stator poles, said stator poles are axially spaced from, radially overlap and axially face toward one of the face sides of the permanent magnet,

said permanent magnet is rotatably mounted relative to said stator defining a direction of rotation,

said permanent magnet has asymmetrically magnetized pole areas on each said face side, each said areas is formed with a main part and an edge part,

in the rest condition of the rotor a rotor pole with said main part is located in the range of a stator pole and with said edge part in the range of the following stator pole in the direction of rotation of the rotor.

4,267,473

SUPERCONDUCTING GENERATOR THERMAL RADIATION SHIELD HAVING SUBSTANTIALLY UNIFORM TEMPERATURE

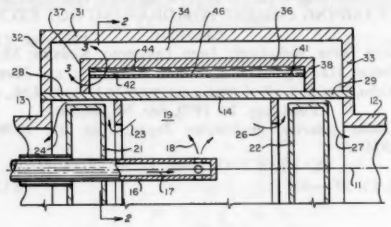
Bruce B. Gamble, Clifton Park, N.Y., assignor to Electric Power Research Institute, Palo Alto, Calif.

Continuation of Ser. No. 744,241, Nov. 23, 1976, abandoned. This application Dec. 26, 1978, Ser. No. 972,902

Int. Cl.³ H02K *9/00*

U.S. Cl. 310—52 **2 Claims**

1. A superconducting electrical generator of the type having a rotor including a field winding adapted to operate at superconducting temperatures, a torque tube surrounding said winding and defining a chamber for cooling said winding by the flow of a liquid coolant, said torque tube and said winding being at substantially the same temperature, an electromagnetic shield secured to said rotor and spaced from said windings, said electromagnetic sheild being substantially at the temperature of the surrounds, and a radiation shield disposed between the electromagnetic shield and the windings within said torque tube and having an outer surface serving to intercept thermal radiation from the electromagnetic shield and an inner surface to reradiate a lesser amount of thermal radiation to the torque tube, said radiation shield having its ends connected to the torque tube to be cooled thereby to maintain said radiation shield at a lower temperature than said electromagnetic shield, and heat transfer means in contact with said inner surface including a refrigerant having a liquid and a vapor phase at the operating temperature of the radiation shield serving to transfer heat from the inner surface of said radiation



shield to the cooled ends of the radiation shield by evaporation and condensation to thereby maintain the radiation shield at substantially uniform temperature, said heat transfer means including a plurality of passages having as one wall the inner surface of said radiation shield and having their ends in communication with the ends of the radiation shield whereby during operation of the rotor the liquid phase is in contact with the inner surface of the radiation shield to conduct heat therefrom, said heat vaporizing the liquid and the vapor condensing when it contacts the ends of the radiation shield to provide a continuous flow of vapor, and therefore heat, from the center of the radiation shield towards the ends.

4,267,474

COOLING ARRANGEMENT FOR THE ROTOR OF AN ELECTRIC MACHINE

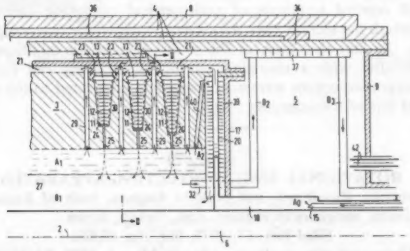
Dieter Kullmann, Langenzenn, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 9, 1979, Ser. No. 55,522

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1978, 2830887

Int. Cl.³ H02K *9/00*

U.S. Cl. 310—52 **15 Claims**



1. In a cooling arrangement for the rotor of an electric machine having a superconducting field winding and a co-rotating mixing chamber near the axis, which, during operation, contains a phase mixture of a coolant supplied from the outside, liquid coolant for cooling the field winding being taken from the mixing chamber and returned to it after being

conducted through the field winding, and from which a discharge of gaseous coolant to the outside is provided, the improvement comprising:

(a) a coolant distribution system disposed at the outer circumference of the field winding;

(b) cooling canals and coolant connecting lines running between the coolant distribution system and the mixing chamber, said cooling canals running through the winding parts of the field winding and said coolant connecting lines running outside the winding parts;

(c) at least one coolant feed line connected to the coolant distribution system for supplying coolant from outside the rotor; and

(d) means for discharging the gaseous coolant at a pressure below 10^5 Pa.

4,267,475

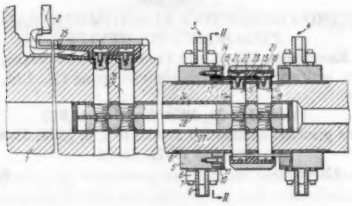
CURRENT SUPPLY ARRANGEMENT FOR ELECTRIC MACHINE ROTOR WINDING

Vladimir S. Vitchenko, Vitebsky prospekt, 29, korpus 2, kv. 142; Gennady K. Smirnov, ulitsa Prazhskaya, 20, kv. 132, and Vladimir G. Shalaev, Novo-Izmailovsky, 55, kv. 92, all of Leningrad, U.S.S.R.

Filed Dec. 22, 1978, Ser. No. 972,398

Int. Cl.³ H02K *39/08*

U.S. Cl. 310—232 **17 Claims**



1. A contact brush device used in an electric machine having a rotor with a shaft and a rotor winding, and including current collecting bars with a plurality of contact brushes and a current supply arrangement for said rotor winding, said arrangement comprising:

a slip ring fitted onto said rotor shaft with an electrically insulating layer therebetween and being engaged by said contact brushes;

a distributing ring mounted on the end face of said slip ring;

a current conducting bar secured to said distributing ring and electrically connected with said rotor winding;

an additional electrically conductive layer electrically connecting said distributing ring with said slip ring,

said additional electrically conductive layer being made of a homogeneous material possessing a resistivity lower than the resistivity of the slip ring material, and having a circumference with a cross-sectional area increasing as the distance along an arc starting from the point of junction of said current conducting bar with said distributing ring increases; whereby the electric current flowing through said slip ring between said current collecting bars and said current conducting bar is uniformly distributed around the circumference of said slip ring.

4,267,476

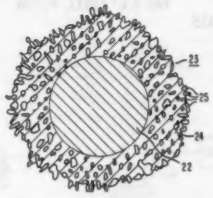
METAL-SOLID LUBRICANT BRUSHES FOR HIGH-CURRENT ROTATING ELECTRICAL MACHINERY

Pang-Kai Lee, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 25, 1979, Ser. No. 51,914

Int. Cl.³ H02K *13/00*; H01R *39/24*

U.S. Cl. 310—251 **8 Claims**



1. A current transfer brush, for a high-current electrical machine, in frictional contact with a member of the machine, said brush comprising a plurality of metal fibers, each fiber plated with a metal-lubricant coating, the coating metal being selected from the group consisting of silver, nickel, copper and mixtures thereof, the metal forming a matrix for uniformly distributed lubricant particles having an average particle size of between about 0.5 micron and about 75 microns, said metal fiber and coating being annealed together and said coating being effective to provide a lubricating effect and minimize wear at the area of frictional brush contact.

4,267,477

ELECTROMOTOR

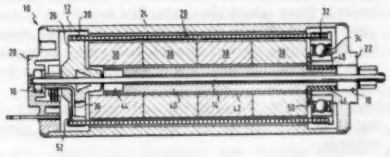
Fritz Faulhaber, Vernate, Switzerland, assignor to Retobobina Handelsanstalt, Fürstentum, Liechtenstein

Filed Mar. 5, 1979, Ser. No. 17,137

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1978, 2812937

Int. Cl.³ H02K *1/24*

U.S. Cl. 310—266 **7 Claims**



1. An electromotor comprising a hollow elongated housing; a motor shaft mounted within said housing for rotation relative thereto; electromagnetic means located within said housing and adapted for rotating said shaft; said electromagnetic means having at least one elongated magnet extending along the elongation of said housing and an elongated winding surrounding said magnet and adapted for rotation together with said shaft, said magnet having a first end portion and a second end portion; and means for supporting said magnet within said housing, said supporting means including a tubular elongated element supporting said magnet and surrounding said motor shaft and having a front end portion and a rear end portion, a supporting element mounted on said shaft and adapted for supporting said front end portion of said tubular element on said shaft so as to allow the rotation of said shaft relative to said tubular element, and an elastic supporting bush mounted within said housing and engaging said magnet and adapted to receive said rear end portion of said tubular element whereby said first end portion of said magnet is supported on said motor

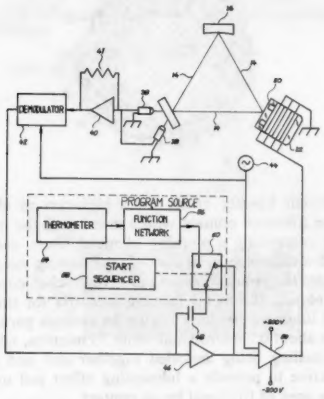
shaft whereas said second end portion of said magnet is supported on said housing.

4,267,478

PATHLENGTH CONTROLLER FOR A RING LASER GYROSCOPE

Bo H. G. Ljung, Wayne, N.J., and Charles J. Williams, Carmel, N.Y., assignors to The Singer Company, Little Falls, N.J.

Filed Nov. 17, 1978, Ser. No. 961,572
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—315 **15 Claims**



1. Apparatus and circuitry for permitting the use of substantially the entire stroke of a piezoelectric actuator stack used in a closed loop servo controlled apparatus by presetting the stroke position of said actuator stack as a function of the startup temperature of said controlled apparatus prior to closed loop servo operation comprising:

temperature sensing means for determining the temperature of said controlled apparatus and for providing an output signal representative of said temperature;

a function network having a mathematical model of the thermal expansion and contraction characteristics of the material from which the controlled apparatus is manufactured stored therein for receiving said output signal and for providing a control signal which varies in accordance with both said mathematical model and said output signal; and

means for selectively applying and removing said control signal as an input to said closed loop servo controlled apparatus.

4,267,479

MOUNTING CLIPS FOR THICKNESS SHEAR PIEZOELECTRIC OSCILLATOR

Toshitake Kato, Tokyo, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Sep. 5, 1978, Ser. No. 939,866
Claims priority, application Japan, Sep. 16, 1977, 52-111371; Oct. 8, 1977, 52-121265; May 25, 1978, 53-62623
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—348 **9 Claims**

1. A thickness shear piezoelectric oscillator comprising:

(a) an insulating base plate;

(b) a lead terminal extending through said insulating base plate and secured thereto;

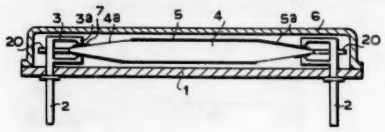
(c) a supporting means provided at that portion of said lead terminal which is extended through and projected from said insulating base plate;

(d) an oscillation piece provided at its both ends with bevel portions and having a node point of bending oscillation of the upper and lower surfaces of said bevel portions, said node point being supported by said supporting means;

(e) an electrode provided at the center part of said oscillating piece;

(f) a lead portion formed on said oscillating piece and for electrically connecting said electrode to said lead terminal;

(g) a cap secured to said insulating base plate and hermetically covering said oscillating piece;

(h) the end surface of said bevel portion of said oscillating piece is supported by a horizontal position determining means for the purpose of determining the position of said oscillating piece in its horizontal direction;

(i) said horizontal position determining means is provided in a direction perpendicular to the direction of providing said supporting means;

(j) said horizontal position determining means is comprised of a thin plate having two legs terminating in opposed projections, said projections engaging the sides of the oscillating piece; and

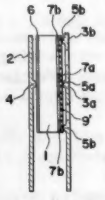
(k) the supporting means includes opposing supporting members for engaging the upper and lower surfaces of said bevel portions for vertically supporting the oscillating piece.

4,267,480

ELECTRO-CONDUCTIVE ELASTOMERIC PAD FOR PIEZOELECTRIC DEVICE

Tetsuo Kanemɔtsu, Hakui, and Tsuneo Taki, Toyonaka, both of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed May 23, 1979, Ser. No. 41,913
Claims priority, application Japan, Feb. 6, 1978, 53/67149
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—366 **8 Claims**



1. A piezoelectric resonator, comprising:

a piezoelectric substrate having first and second major opposed surfaces;

first and second electrode layers formed on said first surface of said substrate and being electrically isolated from each other;

a third electrode layer formed on said second surface of said substrate;

first and second electroconductive terminal members each having an inner face and a contact element protruding therefrom, said first and second electroconductive terminal members being electrically isolated from each other;

a third electroconductive terminal member having an inner face and a contact element protruding therefrom, said

contact element of said third electroconductive terminal member being in electrical contact with said third electrode layer; said first, second and third electroconductive terminal members cooperating with each other to maintain said piezoelectric substrate in position therebetween;

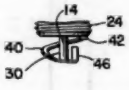
a unitary direction-oriented electroconductive plastic sheet disposed on and in electrical contact with said first and second electrode layers and between said first and second electrode layers and said contact elements of said first and second electroconductive terminal members, said electroconductive plastic sheet being conductive only in the direction perpendicular to said first major surface, and said first and second terminal members being so located that they are in electrical contact with said first and second electrode layers, respectively, through different, non-overlapping portions of said direction-oriented electroconductive plastic sheet, said electroconductive plastic sheet acting as a cushioning element interfacing said first and second terminal member and said first and second electrode layers, respectively.

4,267,481

SPARK PLUG WITH HOT/SHARP GROUND ELECTRODE

Larry D. Sauder, Rte. 2, Box 545, Lockport, La. 70374

Filed Apr. 12, 1979, Ser. No. 29,362
Int. Cl.³ H01T *13/32*
U.S. Cl. 313—139 **12 Claims**



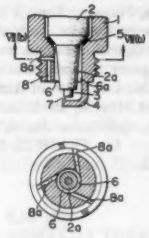
1. A spark plug comprising: an elongate central electrode; an insulating body around and embedding said central electrode; a conductive metal casing means coaxial on and rigidly carrying said insulating member with an externally threaded cylindrical end portion coaxial with and radially spaced apart from one end portion of said central electrode; a second electrode secured in conductive relationship on said cylindrical end portion; said one end portion of said central electrode having a terminal portion projecting beyond a plane through the terminal end surface of said cylindrical end portion; said second electrode consisting of a flat metal strip having its cross section width to thickness ratio essentially constant throughout and approaching 2:1 and having a fixed end and a free end, the fixed end being structurally integrally secured to the metal casing, the central portion of said electrode strip extending away from said threaded end portion a distance beyond the end of the projected end portion of said central electrode, passing at least partially around said central electrode in spaced relation thereto and configured so its free end has a reverse bend disposing a terminal portion of said free end of said electrode strip so that it projects back toward said insulating body, is parallel to, is spaced in a gapped relationship to and is disposed with its widest surfaces essentially radial to the axis of said central electrode; the entire second electrode being located in a space within the theoretical cylinder defined through the base of the threads on the said threaded end portion of the metal body.

4,267,482

IGNITION SPARK PLUG

Toshiharu Iwata, Aichi, and Tadashi Hattori, Okazaki, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Mar. 31, 1978, Ser. No. 892,137
Claims priority, application Japan, Apr. 7, 1977, 52-40128; Apr. 21, 1977, 52-46533; Aug. 5, 1977, 52-94426
Int. Cl.³ H01T *13/20*
U.S. Cl. 313—143 **3 Claims**



1. A spark plug for use with a spark ignition-type internal combustion engine which has a combustion chamber,

said spark plug comprising:

a tubular metal plug body having a longitudinal bore with an open end;

an insulator having a leg portion extending centrally within said plug body and out through said open end;

a ring of packing mounted in said plug body distally of said open end, said insulator leg portion extending through said ring of packing and being supported upon said plug body via said ring of packing material;

said plug body bore, axially outwardly of said ring of packing to said open end being radially oversize relative to said insulator leg portion axially outwardly of said ring of packing to said open end, thereby defining an annular space within said plug body bore, extending from said ring of packing to said open end;

a center electrode extending from within said insulator leg portion to axially outwardly of said open end so as to be directly exposed, in use, to said combustion chamber;

a ground electrode mounted on said plug body and extending therefrom axially outwardly of said open end and laterally into gapped adjacency with said center electrode; and

means defining at least one passageway formed in said plug body, said at least one passageway having one end thereof positioned for open communication, in use, with said engine combustion chamber and having another end thereof in open communication with said annular space adjacent said ring of packing, so that during the running of the engine, the velocity of fresh combustible gas mixture flowing into said annular space through said open end is decreased due to the opposing introduction of fresh combustible gas mixture into said annular space through said passageway, thus decreasing the propagation of flame and the production of incompletely burned gas within said space and thereby decreasing carbon fouling of said spark plug;

said at least one passageway including a first axially extending portion that is eccentrically located relative to the longitudinal axis of said plug body and a second portion that extends substantially transversally relative to said longitudinal axis;

said first portion having said passageway one end;

said second portion having said passageway other end and intersecting said annular space substantially tangentially of a circumference of said annular space; and

said first portion intersecting said second portion intermediate said one end and said other end of said passageway, so that

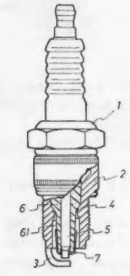
the burned gas including carbon particles entering said annular space via said passageway vortically whorls within said annular space and such of these carbon particles as become deposited on said spark plug within said annular space are caused by centrifugal force to non-foulingly deposit on the plug body, away from said leg portion of said insulator.

4,267,483

INSULATOR ON SPARK PLUG ELECTRODE COATED WITH ZIRCONIUM AND VANADIUM OXIDES

Koichi Nakajima, Nagoya; Tomoji Ishiguro, Aichi; Tokuhiko Okamoto; Minoru Konaka, both of Nagoya; Minoru Nagai, Kariya; Kanji Higuchi, Hekinan, and Kenji Sasaki, Kariya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo and Nippondenso Co., Ltd., both of Aichi, Japan

Filed May 30, 1979, Ser. No. 43,843
Claims priority, application Japan, Jun. 5, 1978, 53-67925
Int. Cl.³ H01T *13/20*
U.S. Cl. 313—143 **16 Claims**



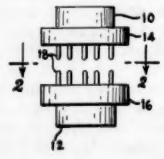
1. An insulator for electrically insulating an axially-disposed electrode from a surrounding casing of a spark plug and having a taper-nose portion on one end which is subject to exposure to combustion gas from an internal combustion engine, the taper-nose portion having an outer surface which is partially coated with a coating of a mixture of from 5 to 99 percent by weight of vanadium oxide, calculated as vanadium pentoxide, and from 1 to 95 percent by weight of zirconium oxide, calculated as zirconium dioxide, the coating having an average thickness within a range of from 0.1 to 10 microns.

4,267,484

PARALLEL MULTI-ELECTRODE SPARK GAP SWITCH

James P. O'Loughlin, Albuquerque, N. Mex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 28, 1979, Ser. No. 70,383
Int. Cl.³ H01J *17/00, 21/00*
U.S. Cl. 313—325 **2 Claims**



1. A spark gap switching device comprising
first and second electrodes of conductive material, each said electrode being cylindrical in shape and terminating in a plurality of spaced juxtaposed rod shaped sub-electrodes of conductive material extending perpendicularly from an end surface thereof, said electrodes being positioned such that the ends of the sub-electrodes of each electrode are in close proximity and in register with the ends of corresponding sub-electrodes of the other electrode forming spark gaps therebetween, and
means for effecting substantial saturable mutual inductance between adjacent sub-electrodes.

4,267,485

FLUORESCENT LAMP WITH SHARP EMISSION PEAKS BETWEN 480 AND 490 NM AND BETWEEN 620 AND 640 NM

Katsuo Murakami; Yoshinori Anzai; Mitsuoki Otani, and Hiroshi Ito, all of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 25, 1978, Ser. No. 954,473
Claims priority, application Japan, Jan. 30, 1978, 53/9042
The portion of this patent subsequent to Nov. 13, 1996, has been disclaimed.
Int. Cl.³ H01J *63/04, 1/62*
U.S. Cl. 313—486 **8 Claims**

1. A fluorescent lamp which comprises a luminous layer comprising mainly a first fluorescent material having the emission peak in a range of wavelength of 480 to 490 nm and a second fluorescent material having the emission peak in a range of wavelength of 620 to 640 nm and a band width (50%) of 120 to 160 nm, on an inner surface of a discharge tube wherein the first fluorescent material is an alkaline earth metal boron phosphate activated by a divalent europium compound having the formula

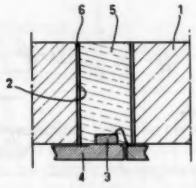
$$m(Sr_{1-x-y-p}Ba_xCa_yEu_pO)\cdot(1-n)P_2O_5\cdot nB_2O_3,$$

wherein the parameters x, y, p, m, and n are respectively in ranges of
$0 \leqq x \leqq 0.5$
$0 \leqq y \leqq 0.2$
$0.001 \leqq p \leqq 0.15$
$1.75 \leqq m \leqq 2.30$ and
$0.05 \leqq n \leqq 0.23$.

4,267,486
DEVICE FOR DISPLAYING ALPHANUMERICAL CHARACTERS

Jacques C. Thillays, Herouville St. Clair, France, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 870,246, Jan. 17, 1978, abandoned. This application Jun. 25, 1979, Ser. No. 51,489
Claims priority, application France, Jan. 20, 1977, 77 01566
Int. Cl.[3] H05B *33/02, 33/20, 33/22*
U.S. Cl. 313—500 **13 Claims**

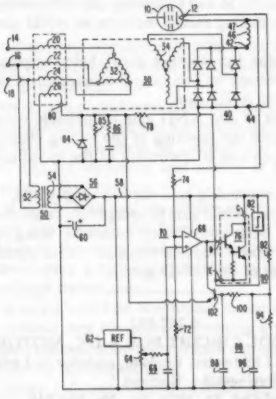


1. A device for displaying alphanumerical characters comprising a block of insulating material having a plurality of cavities extending into said block, at least one semiconductor electroluminescent diode being provided at each cavity, and a transparent resin filling said cavities and contacting the walls of said cavities over the entire extent of said cavities in said block, said transparent resin and said insulating material of said block being formed of respective different substances which do not adhere together for forming a reflecting interface between said cavity walls and said resin along said entire extent.

4,267,487
REGULATED FILAMENT SUPPLY FOR HIGH-POWER TUBES

Robert M. Unetich, Pittsburgh, and William Shibler, Bethel Park, both of Pa., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 2, 1980, Ser. No. 136,697
Int. Cl.[3] G05F *1/64*
U.S. Cl. 315—107 **7 Claims**

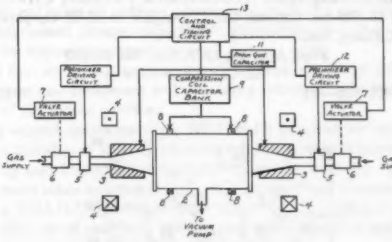


1. An improved tube arrangement comprising:
a high-power electron tube including a heating filament;
a source of alternating line voltage;
a transformer including a primary winding and a secondary winding;
coupling means coupling said primary winding to said source of alternating line voltage for causing a transformed line voltage to appear at said secondary winding;
rectifying means coupled to said secondary winding for rectifying said transformed line voltage to produce a pulsating direct voltage;
filtration means coupled to said filament and to said rectifying means for filtering said pulsating direct voltage to produce a filtered direct voltage and for applying said filtered direct voltage to said heating filament;
wherein the improvement lies in that:
said coupling means comprises saturable reactor means interposed between said source of alternating line voltage and said primary winding for presenting a controllable impedance to said alternating line voltage source for varying the current supplied to said primary; and
wherein the improvement further comprises:
saturable reactor control means coupled to said saturable reactor and to said filtration means for controlling said impedance in a feedback manner for regulating said filtered direct voltage applied to said filament.

4,267,488
CONTAINMENT OF PLASMAS AT THERMONUCLEAR TEMPERATURES

Daniel R. Wells, Miami, Fla., assignor to Trisops, Inc., Austin, Tex.

Filed Jan. 5, 1979, Ser. No. 1,276
The portion of the term of this patent subsequent to Jan. 10, 1995, has been disclaimed.
Int. Cl.[3] G21B *1/00*
U.S. Cl. 315—111.7 **17 Claims**



1. A method of heating and compressing plasma comprising the steps of confining the plasma in a vacuum chamber, generating a primary containment magnetic field within and surrounding said vacuum chamber, inductively energizing said plasma to generate ringlike plasmoids moving toward collision with each other in the chamber along an axis extending in a direction parallel to said magnetic field, said primary magnetic field acting to constrain and guide said plasmoids along said axis, and additionally compressing said plasmoids as they approach collision.

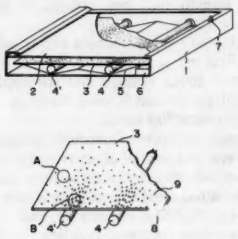
4,267,489
THIN SCHAUKASTEN

Hisao Morohashi, Yokohama, Japan, assignor to Ohno Research and Development Laboratories Company Limited, Yokohama, Japan

Filed Nov. 19, 1979, Ser. No. 95,303
Claims priority, application Japan, Dec. 1, 1978, 53/165653[U]; Apr. 3, 1979, 54/40171
Int. Cl.[3] G02B *27/02*
U.S. Cl. 315—324 **8 Claims**

1. A thin schaukasten for observing an image forming film through utilization of rays of light passing through a light diffusing plane, comprising at least a diffusive transparent plate, a light homogenizing member, a fluorescent lamp, and a reflection member, the light homogenizing member being a

transparent support media having formed thereon a reflection pattern, wherein the distribution of transmission bearing substantially opposite in its relationship to the distribution of luminous flux applied to the transparent support media is provided by the reflection pattern.



4,267,490

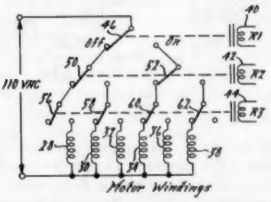
BINARY SWITCHING CONTROL CIRCUIT FOR AN ELECTRICALLY ADJUSTABLE PATIENT CHAIR

Paul G. Thiene, Laguna, Calif., assignor to SMR Corporation, St. Louis, Mo.

Filed Aug. 14, 1979, Ser. No. 66,457

Int. Cl.³ H02P *1/54*

U.S. Cl. 318—51 **1 Claim**



1. A switching control circuit for selectively controlling the energization of six motor windings for providing lift, tilt and head adjustments on an electrically adjustable patient chair, comprising three relays connected to said motor windings in a binary switching arrangement for separately controlling the energization of each of said motor windings, and six manually operable switch means connected between a power source and the relay coils of said relays for controlling energization of said relay coils, wherein a first of said switches comprises a single-pole single-throw switch that is connected to the relay coil of said first relay, a second of said switches comprises a double-pole single-throw switch that is connected to the relay coils of said first and second relays, a third of said switches comprises a single-pole single-throw switch that is connected to the relay coil of said second relay, a fourth of said switches comprises a double-pole single-throw switch that is connected to the relay coils of said second and third relays, a fifth of said switches comprises a single-pole single-throw switch that is connected to the relay coil of said third relay, and a sixth of said switches comprises a double-pole single-throw switch that is connected to the relay coils of said first and third relays.

4,267,491

ELECTRICAL REGULATING DEVICE FOR SPEED CONTROL DEVICES

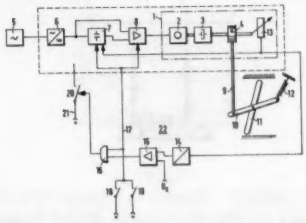
Harald Collonia, Königstein, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 4, 1978, Ser. No. 966,483

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1977, 2755338

Int. Cl.³ H02P *5/16*

U.S. Cl. 318—311 **4 Claims**



1. In an electrical regulating device, particularly for a speed control device for motor vehicles with a servomotor, a rotatably mounted setting element which actuates an adjustment actuator, the setting element being in operative connection with the servomotor via an electromagnetic coupling, and a monitoring stage for the mechanical functioning of the coupling, the improvement wherein

the monitoring stage contains,

means for detecting the resetting speed of the setting element or the adjustment actuator,

means for comparing the actual resetting speed with a pregiven reference value, and

means for producing a signal upon an unsafe deviation of the actual resetting speed from the reference value,

said means for detecting the resetting speed constitutes an electrical position transmitter coupled with said setting element,

a differentiator stage is connected to and following said transmitter,

said comparing means comprises a comparator having one input connected to and following said differentiator stage,

said signal producing means includes an AND gate having two inputs,

said comparator has another input being applied with a reference voltage and an output connected to one of the inputs of said AND gate,

the other input of said AND gate is appliable with a signal which releases the resetting of the setting element,

a current supply line is connected to the speed control device,

a switch is connected in said current supply line,

the output of said AND gate is operatively connected to said switch, the latter constituting means for being opened to turn-off the control device when an output signal appears at the output of said AND gate.

4,267,492

CONTROL CIRCUIT FOR A D.C. MOTOR

Frank Manners, Lightwater, England, assignor to Lansing Bagnall Limited, Basingstoke, England

Filed Oct. 31, 1978, Ser. No. 956,046

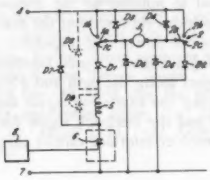
Claims priority, application United Kingdom, Nov. 3, 1977, 45818/77; May 31, 1978, 45818/78

Int. Cl.³ H02P *3/14*

U.S. Cl. 318—376 **14 Claims**

1. A direct current motor control circuit in which the armature is arranged for reversible connection in a main path for current to flow, in a drive mode of the circuit, from a first

supply terminal to a second supply terminal through the armature and a current chopper, and in which switch means are provided for selectively switching the control circuit from said drive mode to a regenerative mode in which the armature is



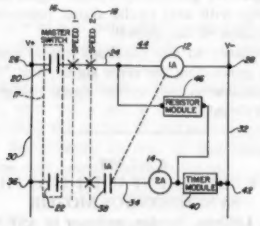
connected across a rectifier bridge to permit return current to flow from the second terminal, in either direction through the armature toward the chopper, means being provided for completing a return path for the return current to flow to the first terminal.

4,267,493

PRE-STEP TIMER CIRCUIT FOR DC MOTOR CONTROL

Richard W. Roof, West Columbia, S.C., assignor to Square D Company, Palatine, Ill.

Filed May 21, 1979, Ser. No. 40,806
Int. Cl.³ H02P *1/04*
U.S. Cl. 318—443 **6 Claims**



1. A pre-step timer circuit for a motor control system having at least two control step circuits, improvement comprising:

a source of potential;

means connected to said source of potential and forming part of said control step circuits for switching therebetween in a pre-selected sequence to control the operation of a motor and for switching said source of potential across said control step circuits;

means in series with said switching means in each of said control step circuits and forming a part thereof and responsive to the energization of each control step circuit for developing a signal proportional to the magnitude of the voltage thereacross;

means in series with said developing means in at least one of said control step circuits and forming a part thereof for delaying the operation thereof until a predetermined, fixed time period has elapsed; and

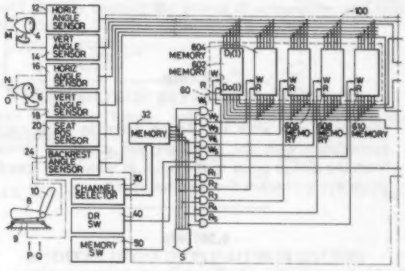
means connected between said switch means and said developing means of a preceding control step circuit to the input of said delaying means in the next control step circuit for sensing and transmitting said voltage signal to pre-time the next delaying means when the switching means is left in the previous control step long enough for the next delaying means to time out so that the next control step is actuated immediately when the swiching means is advance thereto.

4,267,494

APPARATUS FOR ADJUSTING THE POSITION AND/OR ANGLE OF EACH MOVABLE EQUIPMENT OF A MOTOR VEHICLE

Hideoki Matsuoka, Yokohama; Takashi Oka, Tokyo; Masanori Mizote, Yokosuka; Kiyoshi Yamaki, Yokohama; Hiroyuki Nomura, Yokohama; Takaaki Mogi, Yokohama, and Akitoshi Mimura, Tokorozawa, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 17, 1979, Ser. No. 4,205
Claims priority, application Japan, Jan. 30, 1978, 53/9523
Int. Cl.³ G05B *19/42*
U.S. Cl. 318—568 **12 Claims**



1. An apparatus for adjusting the position, including selectively the angular position, of at least one equipment movably installed in a motor vehicle such that each of said at least one equipment takes an optimal position for each of a plurality of predetermined persons expected to alternately drive the vehicle, the apparatus comprising:

(a) first means for sensing actual position of each of said at least one equipment and providing information indicative of the sensed position;

(b) second means having a WRITE-IN function for storing a plurality of sets of reference information each provided by said first means when each of said at least one equipment takes an optimal position for one of said persons and a READ-OUT function for selectively providing a specific set of reference information with respect to specific one of said persons;

(c) third means responsive to said first and second means for producing at least one control signal by comparing information which is provided by said first means and is indicative of actual position of each of said at least one equipment with said specific set of reference information; and

(d) fourth means for adjusting the position of each of said at least one equipment in accordance with said at least one control signal.

4,267,495

MACHINE SPEED CONTROLLER

Bernard W. Wilterdink, Claremont, N.H., assignor to Cone-Blanchard Machine Company, Windsor, Vt.

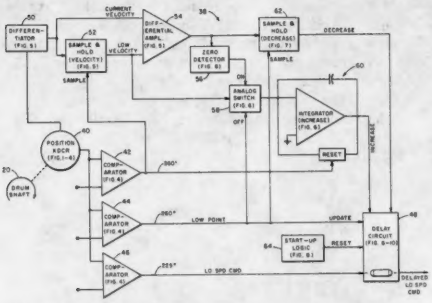
Filed Oct. 5, 1979, Ser. No. 82,413
Int. Cl.³ G05B *19/24*
U.S. Cl. 318—571 **12 Claims**

1. A control system for generating a speed change command to attain a nominal speed at a design point in the operating cycle of a machine, comprising

means for generating an early speed change signal at a predetermined point in advance of said design point in each cycle,

means for issuing said speed change command following a variable delay initiated by said early speed change signal including delay register means for storing a value indicative of the variable delay applied in the preceding cycle, and delay generate means for generating said variable

delay according to the value stored by said delay register means at the time of said early speed change signal, and update means for adjusting the value stored by said delay register means after the design point in each cycle in accordance with the direction and extent of deviation from the design point of the point at which the speed in a given cycle reaches the nominal speed.



4,267,496

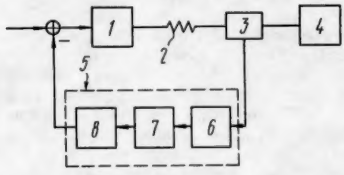
DEVICE FOR DAMPING OSCILLATIONS

Gely M. Ivanov, ulitsa 3 Tverskaya-Yamskaya, 42/8, kv. 45, Moscow; Vladislav I. Novikov, ulitsa Kosmonavtov, 44, kv. 18, and Vladimir V. Khmelev, 1 Pankovsky proezd, 21, kv. 24, both of Ljubertsy Moskovskoi oblasti, all of U.S.S.R.

Filed May 18, 1979, Ser. No. 40,434

Int. Cl.[3] G05B *5/01, 6/02*

U.S. Cl. 318—615 **14 Claims**



1. A device for damping mechanical oscillations in a system comprising a controlled drive; a flexible member with a moment or force transducer, mechanically coupled to said drive; an actuator also coupled mechanically to said flexible member; a corrective assembly designed to shape a signal being in phase opposition with respect to the a-c component of oscillations within said system; included in said system for damping occurring oscillations and having a differentiating unit whose input is connected to said moment or force transducer, a net time lag time unit whose input is connected to the output of said differentiating unit, and an amplitude tuning unit, the input of which is connected to the output of said net time lag tuning unit and whose output is connected to the input of said drive.

4,267,497

RESOLVER INTERFACE FOR SERVO POSITION CONTROL

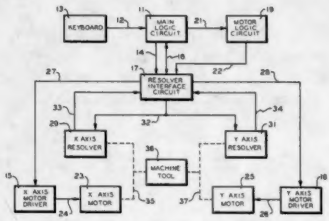
Lee E. Cannon, and Amos R. Mansfield, Jr., both of Bozeman, Mont., assignors to Dana Corporation, Toledo, Ohio

Filed Mar. 20, 1978, Ser. No. 888,482

Int. Cl.[3] G05B *1/06*

U.S. Cl. 318—661 **16 Claims**

1. In an apparatus for controlling the movement of an object along a predetermined path from an initial position to a final position including a motor for moving the object along the path, drive means for controlling the motor in response to an error signal representing the difference between a selected position intermediate the initial and final positions along the path and an actual position of the object along the path, a control circuit for generating a control signal as a train of pulses proportional in number to the distance between the initial and final positions representing the selected position, a resolver coupled to the motor and responsive to an excitation signal for generating a feedback signal representing the actual position of the object along the path and a resolver interface circuit for generating the excitation signal and responsive to the control signal and the feedback signal for generating the error signal, the resolver interface circuit comprising:



means for generating a cyclic signal;

means responsive to the control signal for accumulating the pulses and generating an instantaneous count total output signal representing the selected position;

means responsive to said cyclic signal and said count total output signal for generating a phase signal having a phase relationship with said cyclic signal representing the selected position of the object;

means responsive to the feedback signal and said phase signal for generating the error signal; and

means responsive to said cyclic signal for generating the excitation signal.

4,267,498

DRIVE EQUIPMENT WITH TWO-PHASE SYNCHRONOUS MOTOR

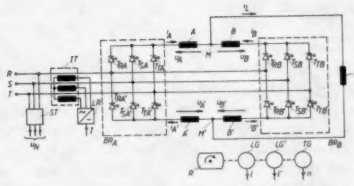
Vilmos Torok, Lidingo, Sweden, assignor to ASEA Aktiebolag, Vesteras, Sweden

Filed Dec. 28, 1979, Ser. No. 108,075

Claims priority, application Sweden, Dec. 12, 1978, 7813347

Int. Cl.[3] H02P *5/34, 7/42;* **H02M** *5/458*

U.S. Cl. 318—723 **9 Claims**



1. In a drive apparatus of a type including a two-phase synchronous motor with two power windings and a frequency convertor for supplying power to said motor from an AC voltage network, an improved frequency convertor comprising:

two convertor bridges connected for receiving power from said AC voltage network;

first means for connecting each of said power windings between a DC terminal of one bridge and a DC terminal of the other bridge, each of said power windings having a center tap means; and

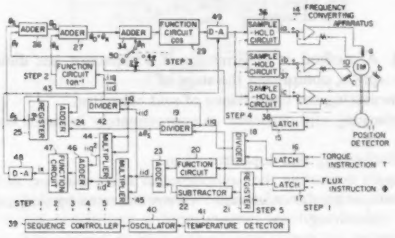
second means for connecting the center tap means of one of said power windings to the center tap means of the other power winding, where said improved convertor is operated as a direct convertor.

4,267,499

METHOD AND SYSTEM FOR CONTROLLING INDUCTION MOTORS

Ryoichi Kurosawa, Tokyo, Japan, assignor to Tokyo Shibaura Kenki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 18, 1978, Ser. No. 970,443
Claims priority, application Japan, Dec. 23, 1977, 52-154529
Int. Cl.³ H02P *5/34, 7/42, 5/28, 7/36*
U.S. Cl. 318—800 **10 Claims**



1. A method of controlling an induction motor comprising the steps of

sequentially adding digital quantities corresponding to a slip frequency of said induction motor at a predetermined time interval,

adding the sum of said sequentially added digital quantities to a digital quantity proportional to an angle of rotation of said motor to obtain a sum value,

computing a primary current vector of said induction motor from said sum value and a current component which influences only the torque of said motor, and

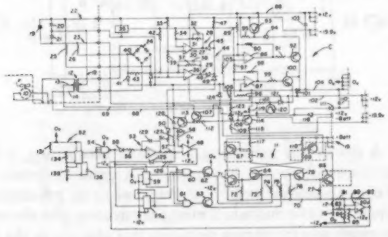
controlling the primary current of said induction motor based upon said primary current vector.

4,267,500

CONTROL COOLING MEANS

Robert F. Bourke, Kamiah, Id., and David K. Johansen, Lake-in-the Hills, Ill., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Sep. 19, 1978, Ser. No. 943,628
Int. Cl.³ H02P *7/00*
U.S. Cl. 318—806 **20 Claims**



10. For use in an apparatus having a battery power supply, a control connected to said battery power supply and having variable means for providing direct current from said power supply to a variable load, and an air moving means for cooling the control, the improvement comprising:

an alternating current motor for driving the air moving means; and

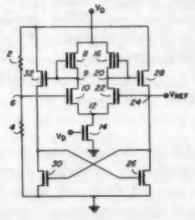
circuit means including inverter means for providing from said battery power supply a variable duty cycle alternating current power supply to said motor for powering said air moving means, said circuit means including capacitor means for providing a direct current power supply to the control at a preselected control voltage, and means responsive to a sag in the direct current power supply voltage to the control to vary the duty cycle of the inverter means to regulate the control power supply voltage and effectively maintain a substantially constant volt-second output waveform of the inverter means, said circuit means including means responsive to a sag in said control power supply for varying the duty cycle of the inverter means and thereby causing the power developed by said motor to vary as a function of the load demand.

4,267,501

NMOS VOLTAGE REFERENCE GENERATOR

Stephen L. Smith, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 21, 1979, Ser. No. 50,729
Int. Cl.³ G05F *1/56*
U.S. Cl. 323—313 **9 Claims**



1. An MOS voltage regulating circuit for generating a stable reference voltage between ground and a source potential, comprising:

a voltage divider coupled to said source potential for dividing said source potential down to a first voltage;

a differential amplifier comprised of field effect transistors, said differential amplifier having inverting and non-inverting inputs and inverting and non-inverting outputs, and non-inverting input coupled to said voltage divider for receiving therefrom said first voltage, said stable reference voltage appearing at said inverting input;

feedback means coupled to said non-inverting output and to said inverting input for raising the voltage at said inverting input to said reference voltage; and

voltage pull-down means coupled to said feedback means and to said inverting input for reducing the voltage at said inverting input to said reference voltage, said voltage pull-down means comprising:

a first field effect transistor having source, drain and gate electrodes, the source electrode of said first transistor coupled to ground and the drain electrode of said first transistor coupled to said inverting input;

a second field effect transistor having source, drain and gate electrodes, the source electrode of said second field effect transistor coupled to ground, the drain electrode of said second transistor coupled to the gate electrode of said first transistor and the gate electrode of said second transistor coupled to the drain electrode of said first transistor; and

a third field effect transistor having source, drain and gate electrodes, the source electrode of said third transistor coupled to the gate electrode of said first transistor, the drain electrode of said third transistor coupled to said

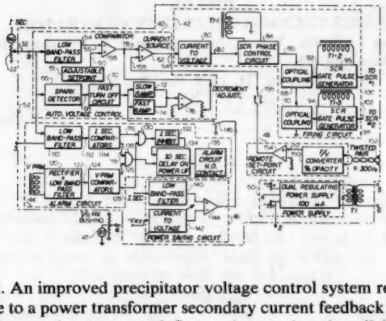
source potential and the gate electrode of said third transistor coupled to said inverting output.

4,267,502

PRECIPITATOR VOLTAGE CONTROL SYSTEM

Robert O. Reese, Lancaster; Karl R. Wieber, Middletown, and James T. Hartman, Reading, all of Pa., assignors to Envirotech Corporation, Menlo Park, Calif.

Filed May 23, 1979, Ser. No. 41,965
Int. Cl.³ B03C *3/68*
U.S. Cl. 323—237 **12 Claims**



1. An improved precipitator voltage control system responsive to a power transformer secondary current feedback signal and operative to control first and second antiparallel SCR switching devices in the transformer primary circuit comprising:

an automatic voltage control circuit including

means for receiving said secondary current feedback signal and for developing a dc voltage signal corresponding thereto,

means for monitoring said dc voltage signal to insure that it does not exceed a predetermined set-point level,

means for converting said dc voltage signal to a corresponding drive current signal,

detector means for monitoring said secondary current feedback signal and for developing a triggering signal when a spark condition is sensed, and

means responsive to said triggering signal and operative to reduce said dc voltage signal to zero for a predetermined, relatively short period and then increase the magnitude of said dc voltage signal in a fast ramp mode to a level below said set-point level and thereafter increase said dc voltage in a slow ramp mode; and

an SCR firing circuit including

means for converting said drive current signal into a corresponding drive voltage signal,

phase control circuit means for comparing said drive voltage signal to an oscillatory reference signal in phase with the secondary current of said power transformer and for developing a pulsewidth modulated signal commensurate therewith,

optical isolator means responsive to said pulsewidth modulated signal and operative to develop first and second isolation signals, and

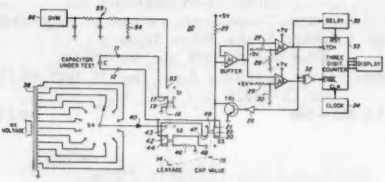
first and second SCR gating means responsive to said first and second isolation signals and operative to develop first and second gating signals 180° out of phase with each other for input to said first and second antiparallel SCR switching devices.

4,267,503

METHOD AND INSTRUMENT FOR TESTING THE OPERATING CHARACTERISTICS OF A CAPACITOR

Marlin D. Westra, 730 S. Summit, Sioux Falls, S. Dak. 57104

Filed Nov. 2, 1979, Ser. No. 90,554
Int. Cl.³ G01R *11/52, 27/26*
U.S. Cl. 324—60 C **5 Claims**



1. A method of determining if a capacitor has dielectric absorption, comprising the steps of

measuring the capacitance of said capacitor,

charging said capacitor to approximately its rated voltage, then

discharging said capacitor, then

again measuring the capacitance of said capacitor, and

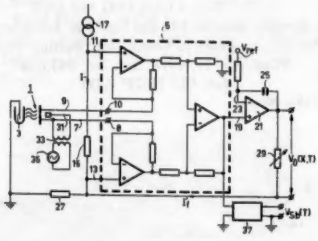
comparing the capacitance values indicated by said steps of measuring.

4,267,504

DEVICE FOR MEASURING A QUANTITY WHICH INFLUENCES A FIELD-EFFECT TRANSISTOR

Piet Bergveld, Enschede, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 22, 1979, Ser. No. 86,922
Claims priority, application Netherlands, Nov. 6, 1978, 7811001
Int. Cl.³ G01R *27/02*
U.S. Cl. 324—62 **3 Claims**



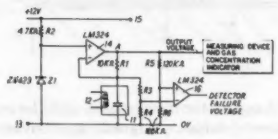
1. A device for measuring a quantity comprising, a field-effect transistor having a source and a drain electrode, said field-effect transistor being located so as to be influenced by said quantity to be measured, means connecting said electrodes to terminals of a measuring circuit so that changes in the resistance between said electrodes influence the output voltage of the measuring circuit, means for applying to the field-effect transistor an auxiliary signal the frequency of which is located outside the frequency range in which changes of the quantity to be measured occur, and wherein the measuring circuit comprises means for separating signals at the frequency of the auxiliary signal from signals within the said frequency range.

4,267,505

FAILURE SENSOR FOR A GAS DETECTOR

Timothy J. Biglin, Brislington, England, assignor to The Horstmann Gear Company Limited, Newbridge Works, England

Filed Aug. 8, 1978, Ser. No. 931,963
Claims priority, application United Kingdom, Aug. 11, 1977, 33810/77
Int. Cl.[3] G01R *31/08, 27/02*
U.S. Cl. 324—65 R 9 Claims



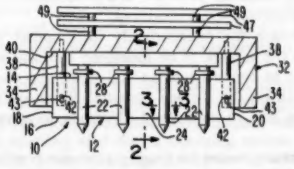
1. A gas detector combined with means for sensing failure of the detector comprising a direct current amplifier having an input and an output, at least one resistor connected between the input and the output to form a feed back path with a negative feed back factor, the gas detector being electrically connected between a reference potential and a point in the feed back path between the resistor and the input to the amplifier, there being in use a difference between the voltage at said point in the feed back path and the voltage at the output of the amplifier, first and second voltage dividers, the first voltage divider being connected between said point in the feed back path and the reference potential and the second voltage divider being connected between the output of the amplifier and the reference potential, and comparator means for sensing a value indicative of said voltage difference for providing an output signal indicative of failure of the detector when a predetermined voltage difference occurs, the voltage at said point in the feed back path and the voltage at the output of the amplifier being fed to said comparator means by respective ones of said voltage dividers.

4,267,506

COLLINEAR FOUR-POINT PROBE HEAD AND MOUNT FOR RESISTIVITY MEASUREMENTS

Thomas J. Shiell, P.O. Box 504, Menlo Park, Calif. 94025

Filed Jan. 2, 1979, Ser. No. 38
Int. Cl.[3] G01R *31/22*
U.S. Cl. 324—158 P 10 Claims



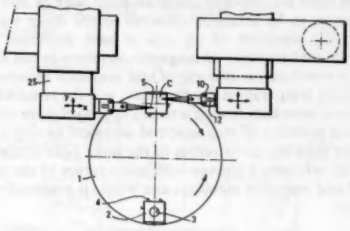
1. A resistivity probe comprising: a rigid, electrically, nonconducting strip having a pair of opposed side edges; and a number of metallic pins rigidly secured to one side of the strip and projecting laterally from said side edges, said strip adapted to be secured to a probe head with said pins being generally vertical, so that the lower ends of the pins can engage a workpiece whose resistivity is to be measured.

4,267,507

CIRCUIT PROBING APPARATUS

Maurice R. Guerpont, Malakoff, France, assignor to Société Anonyme de Telecommunications, Paris, France

Filed Feb. 23, 1979, Ser. No. 14,573
Claims priority, application France, Feb. 24, 1978, 78 05302
Int. Cl.[3] G01R *31/22*
U.S. Cl. 324—158 P 4 Claims



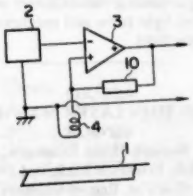
1. An apparatus for probing an electric circuit, comprising at least two probe tips, support arms respectively carrying the probe tips, means for displacing the support arms between a high position and a low position in which the probe tips are in contact with the circuit, and respective program-controlled displacement units to displace the support arms so that the probe tips may assume any desired position in a plane parallel to that of the circuit to be tested, each displacement unit comprising a lower plate, a first drive unit for displacing the lower plate in a first direction, an intermediate plate placed above the lower plate and movable with respect to said lower plate in a second direction at right angles to said first direction, the respective support arm being secured to the intermediate plate, an upper plate placed above the intermediate plate, a second drive unit for displacing the upper plate in said second direction, the intermediate plate being movable with respect to the upper plate in said first direction, and means for fixing the relative position of the two drive units according to each of said directions.

4,267,508

APPARATUS FOR NON-CONTACT MEASUREMENT OF DISTANCE FROM A METALLIC BODY USING A DETECTION COIL IN THE FEEDBACK CIRCUIT OF AN AMPLIFIER

Seigo Ando, Yokohama, Japan, assignor to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 6, 1979, Ser. No. 27,830
Claims priority, application Japan, Apr. 11, 1978, 53-41728
Int. Cl.[3] G01R *33/00;* G01N *27/72;* G01B *7/14;* H01F *15/16*
U.S. Cl. 324—225 4 Claims



1. In an apparatus comprising a feedback amplifier including a feedback circuit connected to a detection coil disposed opposite to a metallic body to be measured, and a reference oscillator for applying to said feedback amplifier a reference signal having a predetermined frequency and predetermined amplitude, wherein, in response to a change in the impedance of said

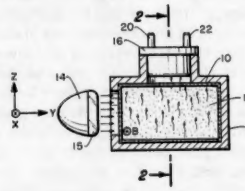
detection coil which impedance changes according to the distance between said detection coil and said metallic body, the amplification degree of said feedback amplifier is controlled to measure the distance between said detection coil and said metallic body disposed opposite thereto in accordance with the amplitude of an output signal of said amplifier, the improvement wherein said detection coil comprises a cylindrical coil having an inner bore of given radius, wherein a plurality of magnetic members each having a high permeability and being in rod form are disposed inside an inner bore of said detection coil so as to be arranged adjacent to the inner wall thereof along the direction of an axis of said detection coil, and wherein said plurality of magnetic members in rod form comprise a combination of some of said magnetic members having a positive temperature characteristic and the remainder of said magnetic members having a negative temperature characteristic, said plurality of magnetic rod members having a diameter smaller than the given radius of the inner bore of the cylindrical coil, whereby a change with temperature of the permeability of said magnetic members as a whole is practically reduced to zero.

4,267,509

MAGNETO-OPTICAL COLLOIDAL CELL AND DEVICE

W. Gordon Graham, 19133 Pala Mesa Pl., Northridge, Calif. 91326

Filed Nov. 1, 1978, Ser. No. 956,565
Int. Cl.³ G01R *33/02, 33/00;* G01N *21/00*
U.S. Cl. 324—244 **30 Claims**



1. A magneto-optical apparatus comprising:
a container having at least portions transparent;
a transparent liquid medium in said container;
a plurality of magnetic particles suspended in said liquid medium thereby forming a substantially transparent colloidal solution;
a light source positioned to illuminate said colloidal solution;
said magnetic particles in said colloidal solution adapted to produce a directional scattering of light under the influence of a magnetic field;
light-sensing means positioned at a predetermined angle with respect to the central axis of said light source;
said directional scattering of light produced by said magnetic particles being toward said light-sensing means;
whereby said light-sensing means senses variations in intensity of scattered light from said magnetic particles caused by the magnetic field.

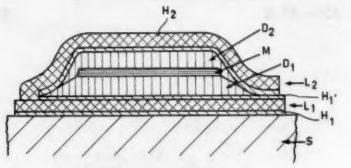
4,267,510

INTEGRATED THIN LAYER MAGNETIC FIELD SENSOR

Ursula Convertini, Borstel; Heinz Dimingen, Hamburg; Holger Lüthje, Halstenbek; Friedrich Küch, and Peter Tummoscheit, both of Bremen, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 14, 1978, Ser. No. 924,497
Int. Cl.³ G01R *33/02*
U.S. Cl. 324—249 **14 Claims**

1. A thin-layer magnetic field sensor in which a thin magnetic layer magnetized in a preferred direction is surrounded by a magnetic HF measuring coil with variable inductance and an external magnetic field and the coil axis are aligned so as to be parallel to a preferred direction of magnetization, the sensor comprising a sequence of superimposed structured layers disposed on a substrate with a first layer of said sequence of layers comprising a structurized metal layer in the form of a row of parallel narrow metal stripes with bevelled sides, a first insulating layer which covers the metal stripes with the exception of the ends of the metal stripes, a magnetic layer covering the first insulating layer, a second insulating layer which completely covers the magnetic layer, and a second structurized metal layer comprising a row of parallel narrow metal stripes with bevelled sides which covers the second insulating layer as well as the ends of the first metal layer.

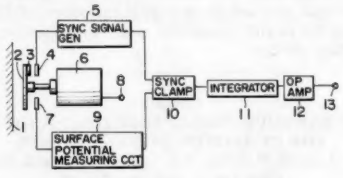


4,267,511

SURFACE POTENTIOMETER

Koji Suzuki, Yokohama, and Takehiko Shibata, Kokubunji, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 31, 1978, Ser. No. 956,331
Claims priority, application Japan, Nov. 9, 1977, 52-133592; Nov. 9, 1977, 52-133593
Int. Cl.³ G01R *29/12*
U.S. Cl. 324—458 **5 Claims**

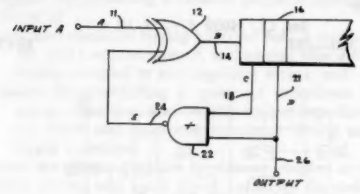


1. A surface potentiometer for measuring the surface potential of a surface, comprising:
a measuring electrode provided at a predetermined distance from the surface to be measured;
chopper means for intermittently interrupting the space between the surface to be measured and said measuring electrode to convert into an AC signal the electrostatic field based on the surface potential of the surface to be measured and to cause said electrode to sense an AC signal;
pulse generating means for sensing a relative position of said electrode with respect to said chopper means, without touching said electrode or chopper means, and for providing an output pulse synchronously with said sensing;
a synchronizing clamp circuit operative in response to the synchronus pulses for clamping the AC signal induced in said measuring electrode; and
an integrator circuit for integrating outputs from said clamp circuit to convert said outputs into a DC signal.

4,267,512
DIGITAL FREQUENCY DIVIDER

William C. Rustenburg, 12 Washington Ave., Burlington, Mass. 01803

Filed Jan. 22, 1979, Ser. No. 5,112
Int. Cl.[3] H03K 21/36, 21/06
U.S. Cl. 328—48 1 Claim

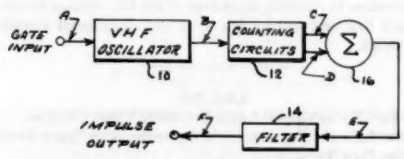


1. A circuit for dividing an electronic signal having a frequency by an odd number and producing an output that is synchronous with the input comprising: an EXOR gate having first and second inputs and an output, means for applying an input signal to the first input of said EXOR gate; a two stage register means the first stage thereof connected to receive the output of the EXOR gate; a NAND gate having first and second inputs and an output; means connecting the first stage output of the register to the first input of the NAND gate; means connecting the second stage output of the register to the second input of the NAND gate; means connecting the output of the NAND gate to the second input of the EXOR gate, and means for taking output from the register which has a frequency less than said input signal to the EXOR gate.

4,267,513
IMPULSE GENERATOR APPARATUS

Michael M. Driscoll, Ellicott, and Thomas K. Lisle, Jr., Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 7, 1979, Ser. No. 73,479
Int. Cl.[3] H03K 3/01
U.S. Cl. 328—60 7 Claims



1. An impulse generator apparatus comprising in combination:

an oscillator means, said oscillator means receiving a gate input signal, said oscillator means providing a clock frequency signal, said oscillator means having a fast settling time,

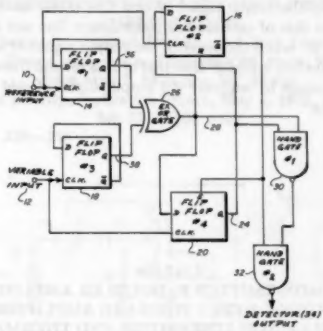
a digital counting means receiving said clock frequency signal from said oscillator means, said digital counting means receiving said gate input signal, said gate input signal enabling said digital counting means, said digital counting means counting the cycles in said clock frequency signal and after a predetermined length of time, generating a first and second signal, means combining said first and second signal to provide a digital waveform, and

an output filter to receive said digital waveform, said output filter having low phase distortion, said output filter removing impulse harmonics and high frequency components from said digital waveform, said output filter removing low frequency components due to non-exact DC offset cancellation, said output filter providing a pulsed sinusoidal output signal.

4,267,514
DIGITAL PHASE-FREQUENCY DETECTOR

Thomas H. Kimsey, Columbia, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 16, 1979, Ser. No. 12,697
Int. Cl.[3] H03L 7/00; H03K 5/26
U.S. Cl. 328—133 5 Claims

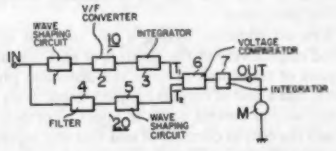


1. A digital phase-frequency detector for phase locked loops comprising: first and second signal input means; a first and second circuit means connected to the said first and second input means for determining a selected phase-frequency relationship between said input signals and producing an output; gate means for gating an output when the selected phase relationship exists connected to the first and second circuit means; third and fourth circuit means connected to the first and second input means for detecting unselected phase-frequency relationships, said third and fourth circuits being so interconnected as to disable said gate means and causing the circuit receiving the higher input frequency to change state preventing the circuit receiving the lower frequency from changing state until the selected phase-frequency relationship is achieved, and a first and second NAND gate connected to the third and fourth circuits and said gate means for allowing an output signal when said conditions are met.

4,267,515
DISTORTION FACTOR METER CIRCUIT

Nobuo Terui, Kodaira, and Kozo Kobayashi, Higashimurayama, both of Japan, assignors to Nakamichi Research Inc., Tokyo, Japan

Filed Feb. 2, 1979, Ser. No. 8,880
Claims priority, application Japan, Feb. 16, 1978, 53-16900
Int. Cl.[3] H03K 5/24
U.S. Cl. 328—147 4 Claims



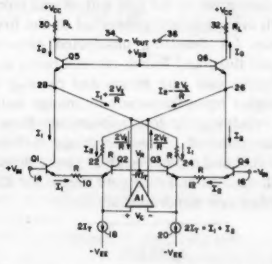
1. A distortion factor meter circuit comprising a first transmission line including means to shape a first signal having a harmonic component into a first DC signal, means to convert

said first DC signal into a square wave signal having a width proportional to the level of said DC signal and a predetermined periodicity, and means to convert said square wave signal into a triangular wave signal having a level linearly increasing during the existence of the level of said square wave signal and linearly decreasing after the level of said square wave signal disappears; a second transmission line including means to produce a second signal formed by eliminating a fundamental from said first signal and means to shape said second signal into a second DC signal; a voltage comparator to compare the output signal of said first transmission line with that of said second transmission line so as to produce a digital signal of "1" when the level of the output signal of said first transmission line is lower than that of said second transmission line and a digital signal of "0" when the level of the output signal of said first transmission line is higher than that of said second transmission line; and means to integrate the output signal of said voltage comparator.

4,267,516
COMMON-EMITTER F_T DOUBLER AMPLIFIER EMPLOYING A FEED FORWARD AMPLIFIER TO REDUCE NON-LINEARITIES AND THERMAL DISTORTION

Einar O. Traa, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Aug. 3, 1979, Ser. No. 63,606
Int. Cl.³ H03F *1/26, 3/45*
U.S. Cl. 330—149 **2 Claims**



1. An improved amplifier circuit for producing enhanced current gain at high frequencies comprising a first pair of emitter-coupled transistors, the collectors of which are coupled respectively to first and second current nodes, a second pair of emitter-coupled transistors, the collectors of which are also coupled respectively to said first and second current nodes to provide an in-phase current output in parallel with the current-output of said first pair of transistors, wherein the improvement comprises:

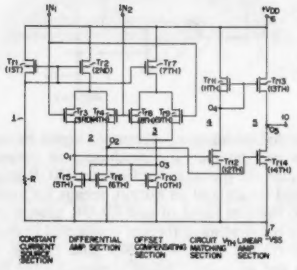
a feed forward amplifier having a pair of input terminals coupled respectively to the emitters of said first and second pairs of transistors to sense the distortion produced thereby, and a pair of outputs coupled respectively to said first and second current nodes to inject a correction current into the output currents of said first and second pairs of transistors; and

a pair of common-base transistors, the emitters of which are respectively coupled to said first and second current nodes to provide a substantially error free output current at the collectors thereof.

4,267,517
OPERATIONAL AMPLIFIER

Tetsuya Iida, Yokohama; Chikara Sato, Kawasaki, and Yasoji Suzuki, Ayase, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Dec. 1, 1978, Ser. No. 965,475
Claims priority, application Japan, Dec. 7, 1977, 52/146793; Dec. 7, 1977, 52/146794; Dec. 7, 1977, 52/146795; Feb. 13, 1978, 53/15238
Int. Cl.³ H03F *3/45, 3/30, 3/16*
U.S. Cl. 330—253 **10 Claims**



1. An operational amplifier comprising:

a constant current source circuit;

a differential amplifier circuit which is constructed by using MOS (metal oxide semiconducter) transistors, connected between a first potential supply terminal and a second potential supply terminal, coupled to said constant current source circuit and supplied with first and second inputs;

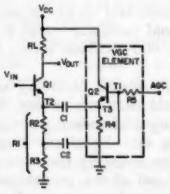
a linear amplifier circuit which is constructed by using MOS transistors, connected between said first and second potential supply terminals, and receives the output of said differential amplifier circuit to produce an output corresponding to said output received; and

an offset compensating circuit which is connected between said first and second potential supply terminals, and to said differential amplifier circuit, for keeping the output DC level of said differential amplifier circuit substantially constant in response to change of the DC voltage levels of said first and second inputs of said differential amplifier circuit.

4,267,518
GAIN CONTROLLABLE AMPLIFIER STAGE

William W. Davis, Rosemount, Minn., assignor to Sperry Corporation, New York, N.Y.

Filed Sep. 13, 1979, Ser. No. 74,851
Int. Cl.³ H03F *3/45*
U.S. Cl. 330—254 **4 Claims**



1. A gain controlled amplifier, comprising:

a first transistor having a base, a collector and an emitter and a voltage gain dependent on the ratio of a collector impedance, coupled to said collector, to an emitter impedance, coupled to said emitter, said first transistor receiving input

signals impressed on said base and producing output signals on said collector amplified in direct proportion to said voltage gain;

capacitor means coupled to said emitter for providing a low impedance, small signal current path;

voltage gain control means coupled to said capacitor means and responsive to small signal variations of said input signals for producing a variable output impedance, comprised of

a second transistor having a second base, a second collector, and a second emitter, said second base and second emitter coupled to said capacitor means, and

means for establishing a quiescent impedance for said second transistor, said variable output impedance varying about said quiescent impedance during said small signal variations,

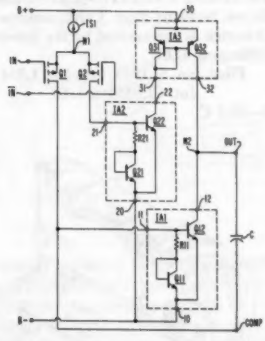
whereby the effective emitter impedance coupled to said first transistor during said small signal variations depends on the combined impedance of said voltage divider means and said variable output impedance, thus increasing said voltage gain.

4,267,519

OPERATIONAL TRANSCONDUCTANCE AMPLIFIERS WITH NON-LINEAR COMPONENT CURRENT AMPLIFIERS

Otto H. Schade, Jr., North Caldwell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 18, 1979, Ser. No. 76,674
Int. Cl.³ H03F *3/45*
U.S. Cl. 330—255 **14 Claims**



1. An operational transconductance amplifier comprising:

first and second operating voltage terminals for receiving operating voltages of first and second opposite polarities respective to each other;

preliminary amplifier means for responding to an input signal to provide signal variations swinging in opposite senses and being superimposed on respective currents of said first polarity at first and second output connections thereof, respectively;

first and second current amplifiers having respective input connections respectively from the first and from the second output connections of said preliminary amplifier means, having respective common connections to said second operating voltage terminal, and having respective output connections for supplying respective output currents of said second polarity;

a third current amplifier having an input connection from the output connection of said second current amplifier, having a common connection to said first operating voltage terminal, and having an output connection for supplying an output current of said first polarity;

an output signal terminal to which the output connections of said first and third current amplifiers connect; and

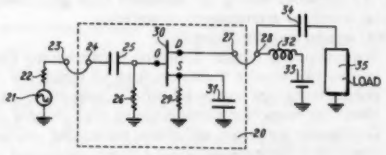
the improvement wherein at least one of said first, second, and third current amplifiers is of a type exhibiting a respective current gain as between its input and output connections which increases with increased current to its input connection.

4,267,520

HYBRID COMPONENT FOR VERY HIGH FREQUENCY AMPLIFICATION

Henri Derewonko; Michel Laviron, and Joel Lepage, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 2, 1979, Ser. No. 35,414
Claims priority, application France, May 3, 1978, 78 13092
Int. Cl.³ H03F *3/60*
U.S. Cl. 330—286 **8 Claims**



1. A hybrid component of the type wherein a field-effect transistor is mounted in a sealed housing and is destined to operate as a high frequency (1–20 Gc/s) amplifier, by insertion between a h.f. supply and a load cooperating with a d.c. supply and means for decoupling the load from said d.c. supply, said hybrid component comprising:

a metallic base, said base constituting a ground plane;

an insulating plate including a central aperture therein, said plate being mounted onto said metallic base;

first and second metallized lines deposited onto said insulating plate, said metallized lines constituting lines with distributed constants, said first metallized line being coupled between said h.f. supply and an input of said hybrid component, said second metallized line being coupled between an output of said hybrid component and said load and said d.c. supply;

a bare field-effect transistor chip including a first large face having a source terminal, a gate terminal, and a drain terminal located thereon and a second large face opposite to said first face, said second large face being welded onto said metallic base inside said aperture of said insulating plate;

a gate input capacitor coupled between said first metallized line and said gate terminal, said gate input capacitor being formed from a ceramic chip metallized on two of its faces, said ceramic chip being welded onto said first metallized line;

a first resistor coupled between said gate terminal and said metallic base, said first resistor being formed from a silicon chip metallized on two of its faces, said first resistor being welded onto said metallic base;

a self-biasing cell coupled between said source terminal and said metallic base, said self-biasing cell including a second silicon chip resistor coupled in parallel with a ceramic chip biasing capacitor, said second resistor and said biasing capacitor being welded onto said metallic base;

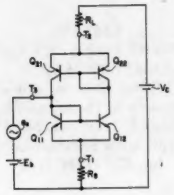
an output conductor coupling said drain terminal to said second metallized line; and

an hermetic closure cap covering said central aperture in said insulating plate.

4,267,521
COMPOUND TRANSISTOR CIRCUITRY

Kenji Yokoyama, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Continuation of Ser. No. 859,192, Dec. 9, 1977, abandoned. This application Feb. 2, 1979, Ser. No. 9,087
Claims priority, application Japan, Dec. 27, 1976, 51-176316
Int. Cl.³ H03F 3/10
U.S. Cl. 330—288 **12 Claims**



1. An amplifier having an improved high gain compound bipolar transistor arrangement, comprising:

first, second and third terminals,

a first compound bipolar transistor circuit having first and second like bipolar transistors both of which are of one conductivity type and each having a collector, emitter and base, said bases being connected to the collector of said first bipolar transistor, and means preventing emitter base potential differences including a direct connection of said emitters said first terminal,

a second compound bipolar transistor circuit having third and fourth like bipolar transistors both of which are of a conductivity type opposite to said one conductivity type and each having a collector, emitter and base, said bases being connected to the collector of said fourth bipolar transistor, and means preventing emitter base potential differences between said third and fourth transistors including a direct connection of the emitters thereof to said second terminal,

said first and third transistor collectors being connected to said third terminal,

said second and fourth transistor collectors being connected to each other,

means including the over-all current amplification factors of said first and second compound transistor circuits being substantially equal to each other for causing each of said compound transistor circuits to be current mirror circuits,

a dc voltage source connected between said first and second terminals,

a load connected in series with said dc voltage source,

a biasing voltage source connected across said first and third terminals for supplying a biasing voltage thereto, and

a variable input signal source connected in series with said biasing voltage for supplying a variable input signal to said third terminal for controlling the current across said first and second terminals for said load.

4,267,522
L.C. OSCILLATOR PROXIMITY DETECTOR

Jean-Marie Periot, Isle d'Espagnac, France, assignor to La Telemecanique Electrique, France

Filed Mar. 19, 1979, Ser. No. 22,027
Claims priority, application France, Mar. 17, 1978, 78 07758
Int. Cl.³ G01V 3/11; H03B 5/12
U.S. Cl. 331—65 **6 Claims**

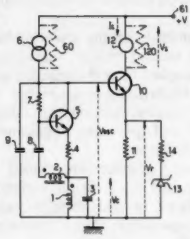
1. A proximity detector comprising:

a parallel oscillatory circuit having an inductance with a grounded terminal, the quality factor and the inherent impedance of the said oscillatory circuit varying as a function of the distance of a metallic object with respect to the said inductance;

amplifier means having an input and an output;

constant current generating means connected to the input of the amplifier means;

feedback means connecting the output of the amplifier means to the input of the amplifier means, said feedback means including resistance means connecting the output of the amplifier means to the oscillatory circuit for feeding

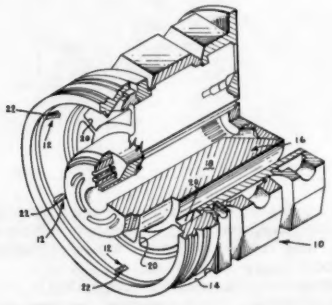


current thereto, wherein said resistance means have a resistance value which is sufficiently small to permit the sustenance of oscillations, as soon as the said object ceases to be in the immediate proximity of the oscillatory circuit, and output signal terminals consisting of the input of the amplifier means and the grounded terminal of the oscillatory circuit.

4,267,523
INCIDENT RADIATION ABSORBER

Donald G. Brown, Newbury Park, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 5, 1979, Ser. No. 1,334
Int. Cl.³ H01S 3/08
U.S. Cl. 331—94.5 C **9 Claims**

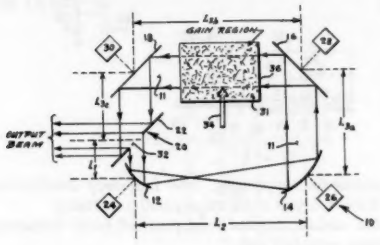


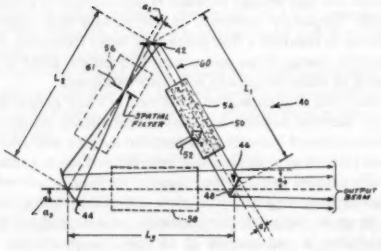
1. An incident radiation absorber comprising a body having a plurality of sides, one of said sides being open to allow incident radiation to enter, the remaining sides being in the form of longitudinally extending panels, said panels being secured to each other at a predetermined angular relationship, said panels being made of a material capable of absorbing a substantial portion of said incident radiation and reflecting the remaining portion of said incident radiation to an adjacent panel and means connected to said body for adjusting the position of said body with respect to said incident radiation whereby substantially all of said incident radiation is absorbed by said absorber, at least one of said panels comprising an inner and an outer longitudinal extending plate, means located within one of said plates for allowing the passage of a cooling fluid therethrough and means located within said adjusting means connected to said fluid passage means for allowing said fluid to enter and exit from said fluid passage means.

4,267,524
UNSTABLE OPTICAL RESONATOR WITH SELF-IMAGING APERTURE

Alan H. Paxton, 314 Cornell Dr., SE., Albuquerque, N. Mex. 87106, and Theodore C. Salvi, 19 Garden Park Cir., Albuquerque, N. Mex. 87107

Filed Mar. 8, 1979, Ser. No. 18,693
Int. Cl.[3] H01S 3/05
U.S. Cl. 331—94.5 C 10 Claims



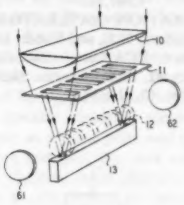


1. In a laser system having at least one gain region, a laser medium located within said gain region, and means for initiating a laser action within said medium thereby emitting a beam of coherent radiant energy, the improvement comprising means forming an unstable resonator for said laser system having a self-imaging aperture, said unstable resonator comprising at least two means in optical alignment with each other and said gain medium for directing said beam of radiant energy therebetween, means forming said aperture of said resonator in optical alignment with said directing means for outputting a portion of said beam of radiant energy from said laser system and feeding back the remainder of said beam of radiant energy to said pair of directing means, said pair of directing means and said outputting and feedback aperture means being spaced apart a predetermined distance from each other, respectively, thereby forming at least two propagation legs of said resonator therebetween and a self-imaging condition for said resonator being met when a single round trip pass of said radiant beam of energy through said resonator starting at said outputting and feedback aperture means produces an infinite Fresnel number, said Fresnel number for each of said propagation legs of said resonator being defined as $F_i = \pm a_1 a_2 / \lambda L$ where a_1 and a_2 are half the width of a geometric beam of radiant energy at the beginning and end of one of said propagation legs, λ is the wavelength and L is the length of each of said propagation legs, the total Fresnel number of said self-imaging condition being F_t where $1F_t = \Sigma 1/F_i = 1/\infty = 0$.

4,267,525
RECOMBINATION LASERS WITH SPATIAL VARIATIONS IN PUMPING

William T. Silfvast, Holmdel; Leo H. Szeto, Howell Township, Monmouth County, both of N.J., and Obert R. Wood, II, New York, N.Y., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 6, 1979, Ser. No. 27,672
Int. Cl.[3] H01S 3/09
U.S. Cl. 331—94.5 G 18 Claims

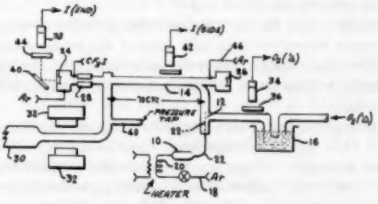


1. A recombination laser comprising:
a resonant laser cavity including means for extracting laser radiation;
a laser amplifying medium;
excitation means for producing an ionized laser amplifying medium in said resonant laser cavity; and
a background gas in said resonant laser cavity for deenergizing electrons obtained from the ionization of said laser amplifying medium, whereby said electrons recombine with the ions of said laser amplifying medium to produce a population inversion in said laser amplifying medium;
characterized in that
said excitation means is a means for generating a plurality of localized regions of ionized laser amplifying medium, each one of which localized regions is separated from the other regions.

4,267,526
CONTINUOUS WAVE CHEMICALLY PUMPED ATOMIC IODINE LASER

William E. McDermott; David J. Benard; Nicholas R. Pchelkin, and Ronald R. Bousek, all of Albuquerque, N. Mex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 13, 1979, Ser. No. 29,947
Int. Cl.[3] H01S 3/095
U.S. Cl. 331—94.5 G 2 Claims



1. A method for producing a continuous wave, chemically pumped lasing action which comprises:
A. providing a resonant cavity having oppositely disposed reflecting means;
B. continuously introducing a stream of gaseous molecular oxygen in the singlet-delta electronic state into said cavity;
C. admixing a continuous flow of gaseous molecular iodine with said stream of oxygen to form an electronically excited, continuously flowing, gaseous mixture;
D. passing said flowing, excited gaseous mixture through

said resonant cavity to produce a beam of coherent electromagnetic radiation; and

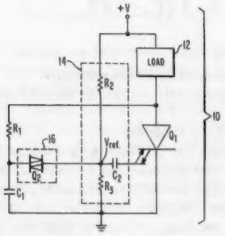
E. continuously exhausting said oxygen and iodine gasses at the end of said resonant cavity subsequent to their mixing.

4,267,527

RELAXATION OSCILLATOR

Cesare J. Petrizio, Flanders, N.J., and Robert H. Isham, Wilkes Barre, Pa., assignors to RCA Corporation, New York, N.Y.

Filed May 11, 1979, Ser. No. 38,210
Int. Cl.³ H03K *3/35*
U.S. Cl. 331—111 **6 Claims**



1. A low power consuming oscillator circuit for maintaining a substantially constant output frequency across a load as a D.C. supply voltage applied to the oscillator circuit fluctuates, comprising:

a GTO device having a main conduction path and a control electrode, said main conduction path being series connected with the load across the D.C. supply voltage and being rendered conductive or non-conductive respectively when positive or negative current is applied to said control electrode;

a resistor and a capacitor connected in series across said main conduction path to produce a charge voltage level at a common connection therebetween, said charge voltage level being exponentially varied in response to voltage changes across said main conduction path;

bias means for producing a reference voltage level at an interconnection thereof in proportion to the D.C. supply voltage, and for applying said reference voltage level to said control electrode; and

threshold means for conducting either positive or negative current respectively to said control electrode when the differential between said reference voltage level and said charge voltage level reaches positive or negative trigger levels;

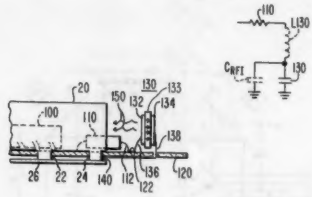
said charge voltage level being recurrently increased toward the D.C. supply voltage level until its differential from said reference voltage level reaches said positive trigger level to render said main conduction path conductive by applying positive current at said control electrode and then being decreased away from the D.C. supply voltage until its differential from said reference voltage level reaches said negative trigger level to render said main conduction path non-conductive by applying negative current at said control electrode, an oscillating voltage level being thereby developed across the load of substantially a constant frequency in accordance with the reference voltage level, the trigger levels of said threshold means and the time constant resulting from said resistor and capacitor combination.

4,267,528

RADIO FREQUENCY INTERFERENCE SUPPRESSION APPARATUS

Gerald E. Thornberry, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed May 11, 1979, Ser. No. 38,101
Int. Cl.³ H03H *7/01*; H04B *1/10*; H04N *5/21*
U.S. Cl. 333—12 **8 Claims**



1. Apparatus for suppressing radio frequency interference radiation from a circuit connection point comprising:

a metallic surface coupled to a point of radio frequency reference potential; and

a first capacitor having a substantially planar first plate and a second plate, a first terminal coupled to said first plate and a second terminal coupled to said second plate, said first terminal being coupled to said circuit connection point and said second terminal being coupled to a point of radio frequency reference potential, said first capacitor acting to conduct a first portion of radio frequency interference energy from said circuit connection point to said point of radio frequency reference potential,

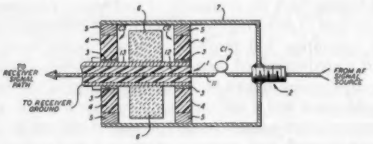
wherein said first capacitor is located in close proximity to said metallic surface with said substantially planar first plate oriented between said metallic surface and said second plate so as to oppose said metallic surface in a substantially parallel relationship, thereby forming a second capacitor including said first plate and said metallic surface with an air dielectric therebetween, said second capacitor exhibiting a capacitance of at least ten picofarads and acting to conduct a further portion of radio frequency interference energy from said circuit connection point and said first terminal to said metallic surface.

4,267,529

TV ANTENNA ISOLATION SYSTEM

Craig W. Brun, Honeoye Falls, and Wilfred L. Hand, Clarence, both of N.Y., assignors to GTE Products Corporation, Stamford, Conn.

Filed Feb. 11, 1980, Ser. No. 120,182
Int. Cl.³ H01P *5/00*
U.S. Cl. 333—12 **11 Claims**



1. An apparatus for coupling a source of RF signals to a receiver and for isolating said receiver from ambient interfering signals, said apparatus comprising:

a transmission line having a first conductive element coupled at a first end to the signal path of the source of RF signals and coupled at a second end to the signal path of the receiver and having a second conductive element coupled to the return path of the receiver;

a first capacitive element coupling the second conductive element to the return path of the source of RF signals, and

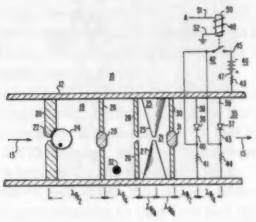
a ferrite element surrounding the transmission line.

4,267,530

IRIS FOR RECEIVER PROTECTOR

William D. Cherry, Beltsville, and Harry Goldie, Randallstown, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 26, 1979, Ser. No. 61,129
Int. Cl.³ H01P *1/14, 1/08*
U.S. Cl. 333—13 **3 Claims**



2. An iris for providing at times a gas plasma discharge in a stage of a receiver protector comprising:

a metal plate having a first and second side and two spaced apart circular openings connected by a slot opening;

said slot opening having a predetermined gap formed by a first and second edge;

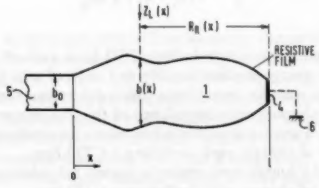
said first and second edges having flat areas positioned opposite one another and tapered surface areas contiguous to said flat areas to enhance the electric field in the area of said gap.

4,267,531

HIGH-FREQUENCY TERMINATING IMPEDANCE

Georg Spinner, 8152 Feldkirchen-Westerham 1, Am Eichberg 12, and Manfred Lang, 80 21 Taufkirchen, Veilchenweg 63, both of Fed. Rep. of Germany

Continuation-in-part of Ser. No. 821,407, Aug. 3, 1977, abandoned. This application May 18, 1979, Ser. No. 40,479
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1976, 2634812
Int. Cl.³ H01P *1/26*
U.S. Cl. 333—22 R **8 Claims**



1. A high-frequency terminating impedance comprising a resistive layer of constant thickness which is disposed on a dielectric support and the lateral edge lines of which extend such that the condition

$$Z_L(x) = Z_L - \int_0^x R\,dx \text{ is fulfilled,}$$

wherein

Z_L: characteristic impedance of the line

$Z_L(x)$: characteristic impedance into the resistive layer at the point (x)

R: remaining resistance between the point (x) and the end of the resistive layer,

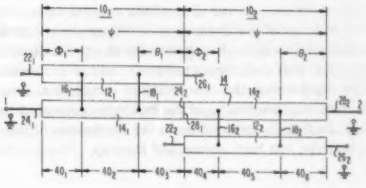
an axially resilient contact of the inner conductor of a coaxial terminal bearing at the end face on a contact which is disposed on the end face of the dielectric support, the resistive layer being disposed between two ceramic plates forming the dielectric and the ceramic plates in turn being in intimate contact with and clamped by metal plates which are in electrical contact with the end of the resistive layer, the ceramic plates having the same thickness, and the terminating impedance including a soft metal foil inserted between the metallic clamping plates and said ceramic plates, the impedance further including a pair of fitting pieces inserted between the ceramic plates and the metallic clamping plates, one of said fitting pieces being made as a plane plate and the other fitting piece forming a wedge member, the two wedge-shaped ceramic plates with the resistive layer disposed therebetween being arranged inclined with respect to the conductor axis of the coaxial conductor, and the soft metal foil being traversed by a metallic grating which prevents a lateral cold flowing of the soft metal.

4,267,532

ADJUSTABLE MICROSTRIP AND STRIPLINE TUNERS

Adel A. M. Saleh, Holmdel, N.J., assignor to W. L. Keefauver, Bell Laboratories, Murray Hill, N.J.

Filed Oct. 11, 1979, Ser. No. 83,591
Int. Cl.³ H01P *5/00*
U.S. Cl. 333—33 **2 Claims**



1. A strip transmission line circuit comprising

a pair of tuning elements (10_1, 10_2) disposed over a round plane, each tuning element comprising

a first strip of conductive material (12) comprising first and second terminals disposed at separate ends of said first strip;

a second strip of conductive material (14) comprising first and second terminals disposed at separate ends of said second strip, said second strip equal in length to, and positioned in a parallel spaced-apart relationship with, said first strip to form a tuning element;

characterized in that

the strip transmission line circuit further comprises

the second terminal of the first strip of one of the pairs of tuning elements being connected to a first terminal of the first strip of the other of the pairs of tuning elements;

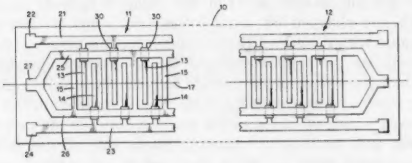
said connection defining a complementary interconnection of the pair of tuning elements, each tuning element further comprising

at least one movable bridging wire (19) connecting the first and second strips, providing a shunt interconnection between said strips, said wire capable of moving along the entire length of said tuning element to provide a variable output impedance of said strip transmission line circuit.

4,267,533
ACOUSTIC SURFACE WAVE DEVICE

Martin E. Dempsey, Acton, and Ching W. Lee, Lexington, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Feb. 1, 1980, Ser. No. 117,707
Int. Cl.³ H03H *9/42, 9/145, 9/64*
U.S. Cl. 333—151 **9 Claims**



1. An acoustic surface wave device including an acoustic surface wave propagating medium and a transducer on a surface of said medium, said transducer comprising:

first, second, and third sets of interdigitated electrodes of conductive material on the surface of the acoustic surface wave propagating medium with the electrodes extending transversely to the central axis of the transducer;

a first bus bar of conductive material on one side of the central axis extending generally along the direction of the central axis and connected to the end of each electrode of the first set on the one side of the central axis;

a second bus bar of conductive material on the other side of the central axis extending generally along the direction of the central axis and connected to the end of each electrode of the second set on the other side of the central axis;

a third bus bar of conductive material on the one side of the central axis extending generally along the direction of the central axis and connected to the end of each electrode of the third set on the one side of the central axis;

a fourth bus bar of conductive material on the other side of the central axis extending generally along the direction of the central axis and connected to the end of each electrode of the third set on the other side of the central axis;

the electrodes of each set and the bus bars connected thereto being electrically isolated from the electrodes of the other sets and the bus bars connected thereto.

4,267,534
SURFACE ACOUSTIC WAVE REFLECTORS WITH WEIGHTED ARRAYS OF SEGMENTED AND NON-SEGMENTED LINEAL ELEMENTS

William J. Tanski, Maynard, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed May 23, 1980, Ser. No. 152,463
Int. Cl.³ H03H *9/02, 9/64, 9/68*
U.S. Cl. 333—153 **14 Claims**

1. Apparatus for reflecting an acoustic surface wave comprising:

a substrate for supporting a surface acoustic wave at a surface thereof,

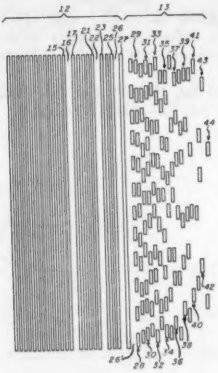
first and second reflector sections in side-by-side parallel cooperative relation affixed at said surface,

said first reflector section including a plurality of lineal reflector elements extending in spaced parallel relation across the path of said acoustic surface wave for reflecting a first portion thereof,

said second reflector section including a plurality of segmented reflector elements extending normal to said path, each in parallel relation with said lineal reflector elements, for cooperatively reflecting substantially the total of the remainder of said surface wave,

said first reflector section being modified according to a predetermined reflectivity function by the absence of predetermined ones of said lineal reflector elements at predetermined locations therein,

the number of segments in said segmented reflector elements progressing from a predetermined maximum in the segmented reflector element adjacent said first reflector section to a single segment element most remote from said first reflector section according to said predetermined reflectivity function.



4,267,535
SWITCHING CIRCUIT CONSISTING OF CTD LINES

Hermann Betzl; Friedrich Kuenemund, both of Munich, and Roland Schreiber, Riemerling, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 22, 1979, Ser. No. 14,138
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1978, 2808604
Int. Cl.³ H03H *17/06;* **G11C** *27/00, 21/00*
U.S. Cl. 333—165 **20 Claims**

$$C_3 = C_1 + C_1' + C_2$$

$$VC_3 = y(C_1 + C_1') + xC_2$$

$$UC_3 = z(C_1 + C_1') + wC_2$$

1. A switching circuit including CTD lines each of which can transfer charge unidirectionally and each of which has a characteristic transfer capacitance which determines the reciprocal of the characteristic impedance of the line comprising:

a first and a second semiconductor means for unidirectional transfer of charge, each including a CTD line;

a third and a fourth semiconductor means for unidirectional transfer of charge, each including a CTD line;

a fifth and a sixth semiconductor means for unidirectional transfer of charge, each including a CTD line;

said CTD lines in said first and second semiconductor means being interconnected at a first end by a first, cross-connected CTD line to form a first line-pair capable of conducting selected quantities of charge inwardly through said CTD line of said first semiconductor means, across said first, cross-connected CTD line and outwardly through said CTD line of said second semiconductor means;

said CTD lines in said third and fourth semiconductor means being interconnected at a first end by a second cross-con-

nected CTD line to form a second line-pair capable of conducting selected quantities of charge inwardly through said CTD line of said third semiconductor means, across said second cross-connected CTD line and outwardly through said CTD line of said fourth semiconductor means;

said CTD lines in said fifth and sixth semiconductor means being interconnected at a first end by a third, cross-connected CTD line to form a third line-pair capable of conducting selected quantities of charge inwardly through said CTD line of said fifth semiconductor means across said third, cross-connected, CTD line and outwardly through said CTD line of said sixth semiconductor means;

said first end of said CTD line of said first semiconductor means being connected to said first end of said CTD line of said fourth semiconductor means and to said first end of said CTD line of said sixth semiconductor means through a first means for conduction;

said first end of said CTD line of said third semiconductor means being connected to said first end of said CTD line of said second semiconductor means and to said first and of said CTD line of said sixth semiconductor means through a second means for conduction;

said first end of said CTD line of said fifth semiconductor means being connected to said first end of said CTD line of said second semiconductor means and said first end of said CTD line of said fourth semiconductor means by a third means for conduction;

said line-pairs and said means for conduction forming a three terminal-pair network.

4,267,536

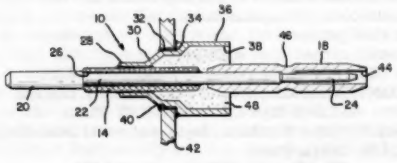
STEPPED PIN POTTED FILTER ASSEMBLY

Robert D. Hollyday, Hershey, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 838,189, Sep. 30, 1977, abandoned. This application Mar. 16, 1979, Ser. No. 21,059

Int. Cl.³ H03H *7/01, 1/00;* **H01R** *19/22*

U.S. Cl. 333—186 **5 Claims**



1. A stepped pin potted filter assembly comprising:

a pin having a stepped profile along the length thereof starting with a first mating end portion of a large diameter, a filter mounting portion of an intermediate diameter joined to said first mating end portion by a first annular step, and a rear end portion of small diameter joined to said filter mounting portion by a second annular step;

a cylindrical filter member having a bore receiving therein said intermediate diameter portion of said pin with an end of said filter member abutting against said first annular step;

a profiled cylindrical eyelet having a first portion closely fitting over said filter member and an enlarged second portion to the rear thereof defining a blind cavity;

a sleeve having a bore receiving therein said rear end portion of said pin and extending at least partially into said blind cavity, said sleeve having an outer diameter greater than said first mating end portion of said pin; and

potting material filling said blind cavity defined by said eyelet.

4,267,537

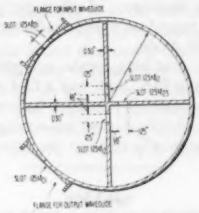
RIGHT CIRCULAR CYLINDRICAL SECTOR CAVITY FILTER

Paul R. Karmel, Potomac, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Apr. 30, 1979, Ser. No. 34,697

Int. Cl.³ H01P *7/06, 1/20, 3/12*

U.S. Cl. 333—231 **2 Claims**



1. A multiple-coupled cavity waveguide bandpass filter comprising

(a) a plurality of resonant sectorial cavities, each comprising a sector of a circular cylinder and being defined by two planar conductive members of length d and width a which intersect at one end at an angle ϕ to form a pair of radial walls, each of said planar conductive members having one or more apertures which couple energy between adjacent resonant sectorial cavities, and

(b) an outer conductive surface of length d and radius of curvature a connecting the other ends of said planar conductive members to form a circumferential wall, and

(c) a pair of conductive end plates separated by length d and enclosing either end of said sectorial cavity,

wherein the respective sectorial cavities, by apertures in said conductive members, are selectively coupled electrically to provide negative mutual coupling and magnetically to provide positive mutual coupling one of said sectorial cavities being coupled at its circumferential wall to an input waveguide and another of said sectorial cavities being coupled at its circumferential wall to an output waveguide.

4,267,538

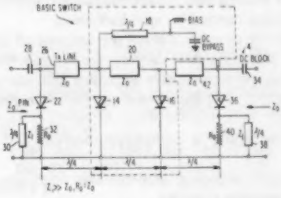
RESISTIVELY MATCHED MICROWAVE PIN DIODE SWITCH

Francois T. Assal, Bethesda; Arnold L. Berman, Kensington, and Khodadad Betaharon, Rockville, all of Md., assignors to Communications Satellite Corporation, Washington, D.C.

Filed Dec. 3, 1979, Ser. No. 99,814

Int. Cl.³ H01P *1/15, 3/08, 1/26*

U.S. Cl. 333—262 **5 Claims**



1. A microwave PIN diode switch of the type having an input port comprising first and second input terminals, an output port comprising first and second output terminals, a first reflecting PIN diode coupled between said first and second input terminals and means for supplying a controllable bias

signal to said first reflective PIN diode to switch said diode between conductive and nonconductive states, said switch receiving a RF signal from first and second RF transmission conductors of a RF transmission path of impedance Z_0 and either passing said RF signal to said output port or reflecting said output signal in accordance with the applied bias, the improvement comprising:

impedance matching means connected between said RF transmission path and said first reflective PIN diode for presenting an impedance of substantially Z_0 to said transmission path regardless of the conductive state of said first reflective PIN diode,

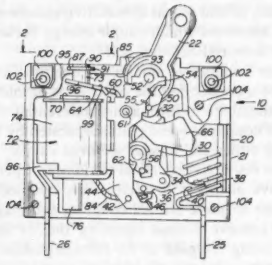
said impedance matching means comprising a first impedance matching PIN diode and a first impedance matching resistor connected in series between said first and second input terminals, said resistor having a resistance value R_0 substantially equal to the impedance Z_0.

4,267,539

CIRCUIT BREAKER HAVING A CAM FOR EXTERNAL ADJUSTMENT OF ITS TRIP POINT

Thomas Guinan, Hamilton Township, Mercer County, N.J., assignor to Heinemann Electric Company, Trenton, N.J.

Filed Aug. 2, 1979, Ser. No. 63,270
Int. Cl.³ H01H *71/74*
U.S. Cl. 335—42 **5 Claims**



1. A circuit breaker comprising

a case incuding two abutting half-cases

a solenoid coil,

a pivotal armature actuatable by said coil,

a pole piece at one end of said coil,

said armature having an unlatching portion and an attractable portion movable toward said pole piece upon predetermined energization of said coil,

a linkage mechanism including a latch engaged by said unlatching portion of said armature to trip said linkage mechanism on predetermined energization of said coil,

a rotatable cam engaging said attractable portion, and

a spring for biasing said attractable portion toward said cam,

said cam being carried by said half-cases,

said cam being accessible from the exterior of said case for rotating said cam and varying the air gap between said attractable portion of said armature and said pole piece, whereby the trip point of the circuit breaker may be varied,

said cam including a cylindrical portion and a circular flange,

said half-cases including semi-circular openings jointly defining a circular opening,

said cylindrical portion being received within said circular opening, and

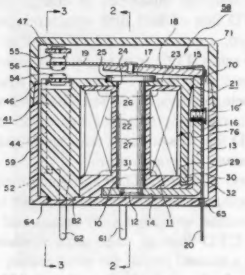
said circular opening being undercut to receive said flange, whereby said cam is carried by said half-cases, but may be rotated within said opening to move said armature attractable portion toward or away from said pole piece.

4,267,540

HINGE-TYPE ELECTROMAGNETIC RELAY

Hiroshi Iketani, Nagaokakyo, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Sep. 12, 1979, Ser. No. 74,827
Claims priority, application Japan, Nov. 1, 1978, 53-135222
Int. Cl.³ H01H *67/02*
U.S. Cl. 335—128 **6 Claims**



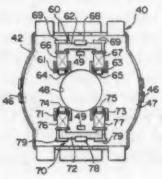
1. In a hinge-type electromagentic relay including a spool member having first and second flanges which is wound with a coil, a core member which extends through a hole formed in the spool member, an armature member which upon energization of the coil is attracted by said core member, a yoke member which is connected between the core member and the armature member, a movable contact member carried by the armature member, and a stationary contact member corresponding to the movable contact member, the improvement comprising an electrically non-conductive molded plastic cover unit with its bottom side open for housing said spool member, said cover unit supporting a stationary contact terminal member carrying said stationary contact member, said bottom side of cover member being closed by said second flange, and said second flange being provided with a plurality of coil terminal members to be connected to said coil.

4,267,541

DEFLECTION YOKE APPARATUS WITH CONVERGENCE DEVICE FOR IN-LINE COLOR TELEVISION CATHODE-RAY TUBE

Tatsuichi Narikiyo, Yokohama, Japan, assignor to Denki Onkyo Co., Ltd., Tokyo, Japan

Filed Dec. 15, 1978, Ser. No. 969,677
Int. Cl.³ H01F *3/00*
U.S. Cl. 335—212 **5 Claims**



1. A deflection yoke apparatus for color television cathode-ray tubes having three in-line electron beams, said apparatus comprising:

(a) a deflection core;

(b) a pair of horizontal and vertical deflection coils each having conductors extending along the surface of said core for deflecting said three electron beams in the horizontal and vertical directions;

(c) a coil separator means positioned between said deflection coils to electrically insulate said deflection coils;

(d) a pair of movable convergence coil means for converging said three electron beams onto the screen of said cathode-ray tube, each convergence coil means having a U-shaped core and a convergence coil mounted on each leg of said U-shaped core, each said U-shaped core being positioned with respect to said electron beams such that the legs of said U-shaped core are perpendicular to the direction of in-line alignment of said electron beams and wherein the direction of movement of said convergence coil means is perpendicular to the direction of in-line alignment of said electron beams;

(e) mounting means for mounting said convergence coil means on said coil separator means; and

(f) means for moving said convergence coil means in a direction perpendicular to the direction of in-line alignment of said electron beams for adjusting the convergence of said electron beams.

4,267,542

THERMAL FUSE FOR ELECTRICAL APPARATUS

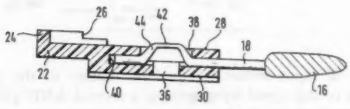
Norbert Weiner, 5275 Bergneustadt 2, Fed. Rep. of Germany

Filed Jun. 11, 1979, Ser. No. 47,261

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1978, 2841114

Int. Cl.³ H01H *85/14*

U.S. Cl. 337—227 **13 Claims**



1. A thermal fuse for electrical apparatus, said fuse being insertable, in use, in a holder formed in the apparatus or capable of being fitted therein, and comprising a thermally influenceable fuse element with connecting wires and an insulating body for holding the fuse element, said fuse element being securable to the insulating body by means of its connecting wires in such manner that the connecting wires are contactable by by countercontacts of the holder, the insulating body being provided with insertion passages for receiving the connecting wires and having in a center portion of the length of the insertion passages, at least one opening extending substantially perpendicularly to the axis of the passage, so that the connecting wire introduced into the said at least one insertion passage is located at least partially free in a center portion of its length.

4,267,543

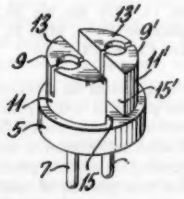
MINIATURE ELECTRIC FUSE

Hiroo Arikawa, Tokyo, Japan, assignor to San-O Industrial Co., Ltd., Tokyo, Japan

Filed Nov. 13, 1979, Ser. No. 93,378

Int. Cl.³ H01H *85/48*

U.S. Cl. 337—255 **6 Claims**



1. A miniature electric fuse comprising a fuse base and body, a fuse cover and a pair of electrically conductive lead wires protruding from said base and partially embedded into said fuse base and body, said fuse body comprising a pair of opposed, spaced apart, generally crescent-shaped members, each of said members being defined by an outwardly curved surface, generally flat top and bottom surfaces and a generally perpendicular inner walls, wherein said inner walls are spaced apart and in facing relation to one another, and wherein each of said electrically conductive lead wires protrude from said base and is partially embedded in one of said crescent-shaped members, a groove cut perpendicularly from the top surfaces of each of said crescent-shaped members a finite distance therein corresponding to the ends of said electrically conductive lead wires and thereafter horizontally in said crescent-shaped member in perpendicular relation to said inner walls, a fusible element stretched between said ends of said electrically conductive lead wires, said fusible element being securely positioned on the bottom of said groove and soldered thereto.

4,267,544

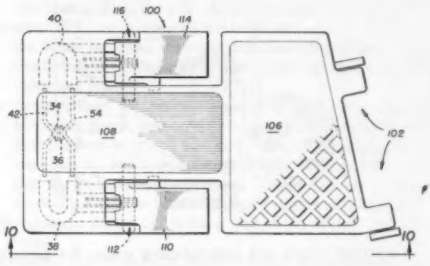
MAGNETIC CONTROL APPARATUS

Wayne T. Wiblin, Ashtabula, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

Filed Nov. 8, 1979, Ser. No. 131,728

Int. Cl.³ H01L *43/04, 43/06*

U.S. Cl. 338—32 H **8 Claims**



1. In an apparatus (32) having a pair (34, 36) of control members being actuatable in response to respective control fields, and a pair (38, 40) of means for respectively producing said control fields, said pair (38, 40) of producing means being selectively movable in relation to said pair (34, 36) of control members between a first position at which respective control field paths are open and a second position at which said respective control field paths are closed to actuate respectively said pair (34, 36) of control members, the improvement comprising:

means (41) for bypassing said control fields from said pair (34, 36) of control members in response to said pair (38, 40) of producing means being simultaneously at said second position.

4,267,545

HYDRAULIC VEHICLE PERFORMANCE SENSOR AND SHIFT POINT INDICATOR

Gary A. Drone, Springfield, Ill., and Harvey W. Rockwell, Port Charlotte, Fla., assignors to Fiat-Allis Construction Machinery, Inc., Deerfield, Ill.

Filed Aug. 17, 1979, Ser. No. 67,623

Int. Cl.³ B60K *23/00;* **G08B** *21/00*

U.S. Cl. 340—52 R **13 Claims**

1. A vehicle performance monitoring system for instructing a vehicle operator when and into which gear a vehicle transmission, having a plurality of gear ranges, should be shifted in order to maintain the vehicle operating within a desired range of performance for each gear range in which the transmission is operated, comprising

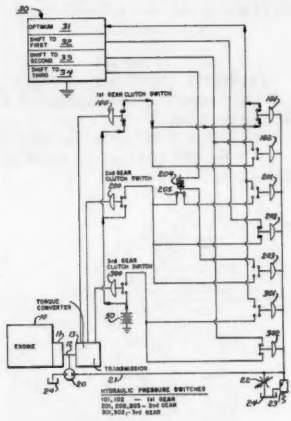
a first plurality of switching means actuated upon placing a vehicle transmission in a gear range for enabling an electrical circuit to be established for each gear range in which the vehicle transmission is operated,

each one of said first plurality of switching means being mutually exclusively actuated upon the shifting of the vehicle transmission into one of the gear ranges in which the transmission is operated,

a source of electrical power adapted to be mutually exclusively coupled through each one of said first plurality of switching means when the vehicle transmission is shifted into each one of the gear ranges in which the transmission is operated,

indicator means actuable to convey information for informing a vehicle operator when and into which gear range the vehicle transmission should be shifted,

an electrical circuit coupled between said first plurality of



switching means and said indicator means for actuating said indicator means in response to the coupling of electrical power thereto,

monitoring means operatively coupled to a vehicle torque converter for providing a source of pressurized hydraulic fluid at a pressure determined by the rotational speed of the torque converter,

a second plurality of switching means operatively connected in fluid communication to said source of hydraulic fluid for actuation thereby in response to the hydraulic pressure coupled thereto,

said second plurality of switching means being interposed in said electrical circuit between said first plurality of switching means and said indicator means for coupling said source of electrical power to said indicator means in response to the actuation of said second plurality of switching means to inform the vehicle operator when and into which gear the vehicle transmission should be shifted.

4,267,546

ALARM DEVICE FOR INFORMING REDUCTION OF PNEUMATIC PRESSURE OF VEHICLE TIRES

Akira Matsuda, Higashimurayama; Norio Goshima, Musashino; Shigeo Yasuda, Musashino; Motoaki Iwasaki, Musashino, and Hiroshi Nishino, Musashino, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo and Mitaka Instrument Company Limited, Musashino, both of, Japan

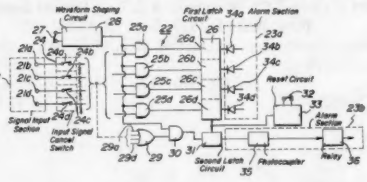
Filed Jun. 18, 1979, Ser. No. 49,829

Claims priority, application Japan, Jun. 20, 1978, 53/75034

Int. Cl.[3] B60C *23/04;* **G08B** *21/00*

U.S. Cl. 340—58 **3 Claims**

1. In an alarm device for signalling a reduction of pneumatic pressure of vehicle tires including an oscillator (**6**) having an oscillation coil secured to a chassis of a vehicle; a resonator (**1**) secured to a peripheral portion of a wheel having a tire adjacent to the oscillation coil and including a pressure sensing switch (**4**) responsive to an abnormal change of the pneumatic pressure of said vehicle tire, a resonant coil and a capacitor (**5**) which are tuned to an electromagnetic wave radiated from the oscillation coil; a signal processing device (**3**) containing means for sensing a change in an oscillation condition generated in the oscillator due to a resonant condition in the resonator switched on and off in accordance with abnormal internal pressure of the tire and for processing a signal sensed by the sensing means; and an alarm means for generating a warning signal in accordance with the output of the signal processing device; the improvements characterized by: the signal processing device including a signal input section (**21**) having a desired number of input terminals, a signal processing section (**22**) having an arithmetic circuit connected to the signal input section and comprising a plurality of first parallel arranged AND gates (**25**) each having an input terminal connected to an output of the signal input section and equal in number to the output terminals of the signal input section, an OR gate (**29**) having a



plurality of input terminals equal in number to the output terminals of the signal input section, a second AND gate (**30**) having an input terminal connected to an output terminal of the OR gate, a wave shaping circuit (**28**) including at an input side a switch (**27**) and having an output terminal connected to another input terminal of the second AND gate and to another input terminal of each first AND gate, respectively, said wave shaping circuit having an ON and OFF output controlled at a prescribed threshold speed of a speed meter, a first latch circuit (**26**) provided at an output side of the first AND gates and having a plurality of latch elements equal in number to the first AND gates, a second latch circuit (**31**) connected to an output of the second AND gate and consisting of a single latch element, and an alarm reset circuit (**33**) having an input terminal connected to an alarm signal reset switch (**32**) and an output terminal connected to a second input terminal of each of the first and the second latch circuits, and an alarm section operated by outputs of the first and second latch circuits, whereby an alarm signal is not generated when the speed of the vehicle becomes lower than the prescribed threshold value at normal internal pressure.

4,267,547

THEFT PREVENTION APPARATUS FOR VEHICLES

Kazuo Sugiyama, Mitaka, Japan, assignor to Dentan Co., Ltd., Tokyo, Japan

Filed Mar. 14, 1979, Ser. No. 20,342

Claims priority, application Japan, Mar. 14, 1978, 53/28831

Int. Cl.[3] B60R *25/10*

U.S. Cl. 340—65 **11 Claims**

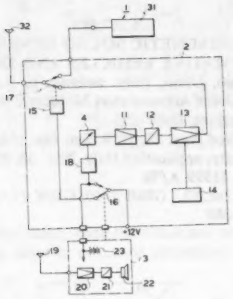
1. A theft prevention apparatus for a vehicle, comprising:

a movement detector provided with a pointer;

said movement detector including means for generating an electric potential when said pointer is moved;

said means for generating an electric potential including a coil mounted on a base portion of said pointer of said movement detector, and magnet poles disposed on each side, in the vertical direction, of said coil at a proper distance from said coil;

a transmitter connected to said movement detector;
a receiver provided with a loudspeaker and adapted for receiving an alarm signal from said transmitter;
said transmitter transmitting said alarm signal to said receiver in response to a predetermined amount of electric



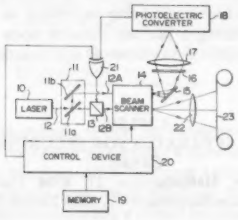
potential when said pointer of said movement detector is moved a predetermined degree; and
said pointer of said movement detector being switchable to its fixed condition against movements by applying an electric potential to said movement detector.

4,267,548

FORMAT-INFORMATION SYNTHESIZING SYSTEM

Tsutomu Kimura, and Masahiro Ohnishi, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Dec. 20, 1978, Ser. No. 971,408
Claims priority, application Japan, Dec. 23, 1977, 52-155250
Int. Cl.³ G06K *9/00*; B41B *13/00*; G01D *15/04*
U.S. Cl. 340—146.3 AH **2 Claims**



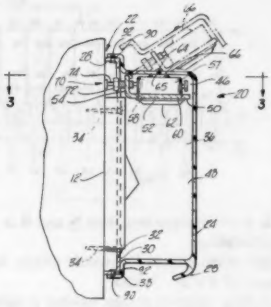
1. A format-information synthesizing system comprising a character pattern signal generating means which generates a character pattern signal in accordance with the information to be recorded, a format pattern signal generating means which generates a format pattern signal by converting a format optically recorded on a format transparency into an electric signal, an "exclusive-or" circuit which receives the character pattern signal and the format pattern signal which are inputted thereinto in synchronization with each other, a laser source, an on-off modulator which modulates a laser beam emitted from the laser source in accordance with the output of the "exclusive-or" circuit, and a beam scanner which deflects the modulated laser beam to scan the surface of a recording medium to record the synthesized pattern of the information and the format on the recording medium.

4,267,549

PULL STATION PROTECTOR

John D. Taylor, 3951 Lotus Dr., Waterford, Mich. 48095

Filed Jan. 31, 1980, Ser. No. 117,365
Int. Cl.³ G08B *25/00*
U.S. Cl. 340—302 **7 Claims**



1. A protector for enclosing wall mounted fire alarm pull stations comprising:
a centrally open mounting frame secured against the wall and surrounding the pull station mounted in the flat wall;
a cover defining an open ended chamber wherein the side of the cover adjacent the open end is dimensioned to abuttingly engage substantially the entire periphery of said mounting frame;
a hinge means for pivotally securing said cover to said mounting frame, said cover being pivotable between and a first position in which said cover abuttingly engages substantially the entire periphery of said mounting frame such that the pull station is enclosed behind said cover, and a second position in which said pull station is uncovered;
engagement means for holding said cover in said first position;
a support plate secured to said cover and dividing said chamber into first and second chamber portions, said first chamber portion being disposed aside the pull station when said cover is in said first pivotal position;
an alarm and an electrical power source for said alarm secured in said first chamber portion; and
means for activating said alarm when said cover is moved from said first pivotal position toward said second pivotal position, said activating means being disposed adjacent said first chamber portion,
and wherein said cover includes a substantially transparent portion covering said second chamber portion and a handle, and further wherein said hinge means is secured to said cover adjacent said first chamber portion.

4,267,550

DIGITAL TO ANALOG CONVERSION CIRCUIT INCLUDING COMPENSATION FET'S

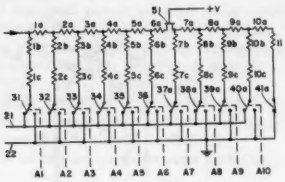
James B. Cecil, Santa Clara, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jan. 25, 1980, Ser. No. 115,203
Int. Cl.² H03K *13/02*
U.S. Cl. 340—347 DA **10 Claims**

1. An integrated circuit for performing digital to analog conversions with improved accuracy, said circuit being comprised of:
a plurality of resistors interconnected as an R—2R ladder network having N states with output legs for carrying currents I, I 2^1, . . . I 2^{N-1} respectively, where N is any integer;
a pair of conductive output buses: and
a total of N transistorized switch means coupled respectively

to said N output legs of said ladder for switching said current received therefrom to a selectable one of said buses in response to externally generated digital signals;

wherein the K switch means which couple the K most significant currents from said output legs to said buses have scaled resistances R, $R\times2^1$, . . . $R\times2^{K-1}$ respectively



where K is any integer less than N and R is any predetermined resistance;

each of the remaining N-K switch means have unscaled resistances of $R\times2^{K-1}$; and

a compensating resistive means having a resistance of approximately two-thirds $R\times2^{K-1}$ is included in the serial leg of stage K.

4,267,551

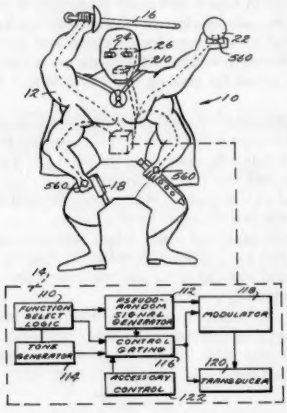
MULTI-MODE DOLL

Scott Dankman; Richard C. Levy, and Bryan L. McCoy, all of 1001 Spring St., Suite 724, Silver Spring, Md. 20910

Filed Dec. 7, 1978, Ser. No. 967,865

Int. Cl.[3] G08B *3/00*

U.S. Cl. 340—384 E **62 Claims**



1. An electronic doll comprising:

a body;

function select means, disposed on said body, for selectively generating respective mode control signals;

electronic signal generator means, disposed in said body and responsive to said mode control signals, including:

means for generating a wind simulation signal representative of the sounds of wind;

means for generating a breathing simulation signal representative of the sounds of breathing;

means for generating a weapons simulation signal representative of weapons fire;

means for generating pseudo-random musical notes; and

means for generating one of a predetermined number of responses to an actuation signal, said one response being determined in a random manner;

transducer means for generating audible output signals representative of electrical input signals applied thereto; and

means, responsive to said mode control signals, for selectively applying said respective electrical simulation signals as input signals to said transducer means.

4,267,552

ELECTROMAGNETIC SOUND GENERATOR FOR AUTOMATIVE VEHICLES AND THE LIKE

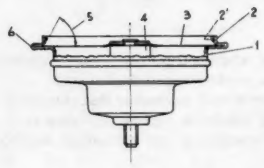
Domenico Frigo, Olmo, Italy, assignor to F.I.A.M.M. S.p.A. Fabbrica Italiana Accumulatori Motocarri Montecchio, Montecchio Maggiore, Italy

Filed Nov. 20, 1978, Ser. No. 962,156

Claims priority, application Italy, Nov. 25, 1977, 41717 A/77; Jun. 20, 1978, 41599 A/78

Int. Cl.[2] G08B *3/10*; G10K *11/10*

U.S. Cl. 340—388 **13 Claims**



1. In an electromagnetic sound generator including a generally cup-shaped housing of ferromagnetic sheet metal for an electromagnetic coil, a generally circular ferromagnetic membrane carrying an armature coacting with said coil, said housing having a rim bent back upon itself and supporting said membrane, and resonator means overlying said membrane, said resonator means having a generally disk-shaped structure coaxial with said housing,

the combination therewith of a coupling ring resting on said rim above said membrane and having a rabbeted upper face which forms an annular shoulder engaged by at least one deformed portion of said rim from above with freedom of relative radial expansion, said upper face being provided with an annular land projecting above said shoulder, said structure being supported on said annular land and defining a plenum chamber open toward said membrane within the confines of said coupling ring.

4,267,553

METHOD AND APPARATUS FOR SECURING ATTACHE CASES

Rolf Vogelsanger, Habuhlstrasse 11, 8704 Herrliberg, and Anton Wicki, Auwiesenstrasse 17, 8050 Zurich, both of Switzerland

Continuation of Ser. No. 927,548, Jul. 24, 1978, abandoned. This application Jan. 5, 1979, Ser. No. 1,286

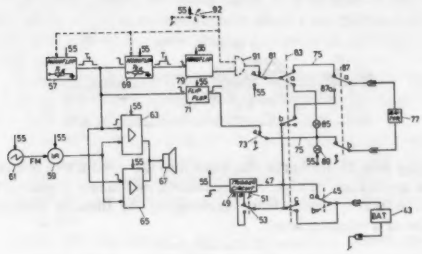
Claims priority, application Switzerland, Jul. 25, 1977, 9169/77

Int. Cl.[3] G08B *13/14*

U.S. Cl. 340—571 **34 Claims**

1. A method for securing a transport container such as an attache case against unauthorized handling comprising the steps of providing an alarm and at least one sensor capable of sensing at least two conditions relative to the forces on said attache case, each of said at least two conditions being selectable as a safety state, placing said attache case under a selected force, and selecting one of said at least two conditions to correspond to said selected force as the safety state, the other or others of said sensed conditions corresponding to a force or forces on said case deviating from said selected safety state

condition by a predetermined value and connecting said at least one sensor to said alarm so that said alarm is inactive



during the selected safety state condition and activated on the occurence of the other or others of said sensed conditions.

4,267,554

ELECTRONIC DEVICE FOR MONITORING A PLURALITY OF RUNNING THREADS ON A TEXTILE MACHINE

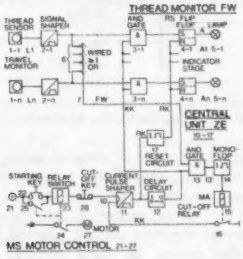
Erich Loepfe, Pfaffhausen; Erich Weidmann, Wetzikon, and Walter Graf, Greifensee, all of Switzerland, assignors to Gebrueder Loepfe AG, Wetzikon, Switzerland

Filed Jun. 8, 1979, Ser. No. 46,852

Claims priority, application Switzerland, Jun. 19, 1978, 6632/78

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—677 **4 Claims**



1. In an electronic device for monitoring a plurality of threads on a textile machine having a drive unit common to all thread travel positions, drive unit control means and a plurality of travel monitors, one being allocated to each thread for generating signals indicating a thread breakage, the outputs of the travel monitors being connected via a common line to a cut-off device, the improvement which comprises:

a circuit activated by said drive unit control means for generating a D.C. control signal within the time interval for which the drive unit is switched on;

a plurality of indicator-devices, one operatively associated with each travel monitor,

each said indicator device comprising a storage element and an indicator connected thereto, for permanent indication of a thread breakage; and

a plurality of switching elements, one operatively associated with each travel monitor,

each said switching element ensuring that a signal, indicating a thread breakage, of the related travel monitor, can set the related storage element only over the duration of the D.C. control signal.

4,267,555

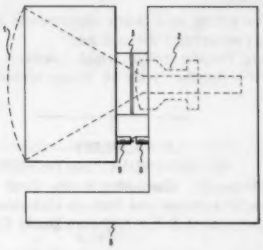
ROTATABLE RASTER SCAN DISPLAY

Clay E. Boyd, Austin; John C. Jones, Georgetown, and Joanne L. Mumola, Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,483

Int. Cl.³ G08B *5/36*

U.S. Cl. 340—748 **3 Claims**



1. In apparatus displaying text material having a format with a longer dimension along a first axis and a shorter dimension along a second axis on a CRT having a longer dimension along one axis and a shorter dimension along the other axis, means for switching the apparatus to display text material having a format with a shorter dimension along said first axis and a longer dimension along said second axis comprising:

means for effecting rotation of said CRT substantially 90 degrees with respect to its yoke;

means for altering the length of each scan line of said CRT in response to said rotation; and

means for altering the length of the sweep of said CRT through successive scan lines in the opposite sense to the alteration in scan line length in response to said rotation.

4,267,556

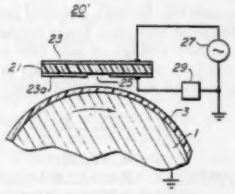
ELECTROSTATIC TRANSFER PRINTING EMPLOYING ION EMITTING PRINT HEAD

Richard A. Fotland, and Jeffrey J. Carrish, both of Holliston, Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Continuation-in-part of Ser. No. 844,913, Oct. 25, 1977, abandoned. This application Dec. 14, 1978, Ser. No. 969,517

Int. Cl.³ B41M *1/22*

U.S. Cl. 346—153.1 **8 Claims**



1. Electrostatic printing apparatus comprising:

a cylindrical dielectric member having a conductive core and a dielectric surface layer;

means for generating ions comprising:

a solid dielectric member, a first electrode substantially in contact with one side of said solid dielectric member, a second electrode substantially in contact with an opposite side of said solid dielectric member, with an edge surface of said second electrode disposed opposite said first electrode to define an air region at the junction of said edge surface and said solid dielectric member, and means for

applying an alternating potential between said first and second electrodes of sufficient magnitude to induce ion producing electrical discharges in said air region between the dielectric member and the edge surface of said second electrode;

an externally applied field between said first electrode and the conductive core of the cylindrical dielectric member, whereby ions are extracted from said generating means to form a latent electrostatic image on said cylindrical dielectric member;

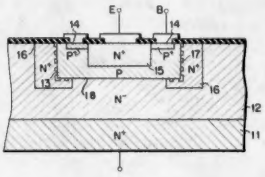
means for toning said latent electrostatic image to form a visible counterpart thereof; and

a pressure transfer roller which contacts said cylindrical dielectric member with an image receptor fed therebetween.

4,267,557
SEMICONDUCTOR DEVICE

Ken-ichi Muramoto, Kawasaki; Keizo Tani, Tokyo; Yutaka Tomisawa, Yokohama, and Makoto Hideshima, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jun. 1, 1979, Ser. No. 44,402
Claims priority, application Japan, Jun. 8, 1978, 53-68317; Jun. 8, 1978, 53-68318; Jun. 8, 1978, 53-68319
Int. Cl.³ H01L *29/06*
U.S. Cl. 357—20 **8 Claims**



1. A junction-type semiconductor device comprising:

a collector region of one conductivity type forming the substrate of said device and having a main surface;

a base region of opposite conductivity type extending from said surface of said collector region into said collector region;

an emitter region of said one conductivity type extending from the surface of said base region into said base region, said base region and said collector region forming a first junction which is reversed biased upon conduction of said device; and

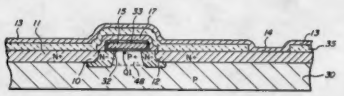
protection means for forming a second junction in said semiconductor device having a lower breakdown voltage than the breakdown voltage of said first junction, with said second junction electrically coupled in parallel with said first junction and reverse biased upon conduction of said device.

4,267,558
ELECTRICALLY ERASABLE MEMORY WITH SELF-LIMITING ERASE

Daniel C. Guterman, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 5, 1979, Ser. No. 1,095
Int. Cl.³ H01L *27/02*
U.S. Cl. 357—41 **18 Claims**

1. An electrically erasable insulated gate field effect transistor memory device comprising source and drain regions defined in a face of a body of semiconductor material, a floating gate on said face between the source and drain regions insulated from the semiconductor material by a gate insulator, a control gate overlying the floating gate insulated therefrom by an interlevel insulator, conductive means overlying said face and insulated therefrom by an insulating layer with a portion of the conductive means overlying a segment of the floating gate, an insulating coating on said segment separating the portion of the conductive means from said segment but permitting the

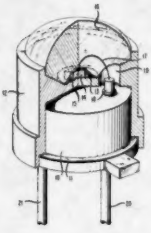


floating gate to discharge electrons into the conductive means upon application of high voltage thereto and means to prevent the conductive means from discharging the floating gate in excess of a selected level.

4,267,559
LOW THERMAL IMPEDANCE LIGHT-EMITTING DIODE PACKAGE

Bertrand H. Johnson, New Providence, and Carl R. Paola, Westfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 24, 1979, Ser. No. 77,988
Int. Cl.³ H01L *23/02*
U.S. Cl. 357—81 **13 Claims**



1. A light-emitting semiconductor assembly comprising

(a) a header;

(b) a heat coupler composed of material having a room-temperature electrical conductivity greater than $2.0 \cdot 10^4 \Omega^{-1} \cdot cm^{-1}$, and a room-temperature thermal conductivity greater than 0.17 watts $cm/cm^2 \cdot °C.$, the coupler having at least an external coupling surface adapted to contacting heat-dissipating means, an upper surface, and a lower surface, the header being bonded to the heat coupler at the lower surface;

(c) a light-emitting semiconductor device, having a bonding surface of area not larger than 1/10 of the area of the external coupling surface of the coupler, being bonded at the bonding surface in thermally and electrically conducting relationship to the heat coupler; and

(d) light transmitting means covering the light-emitting device, adapted to transmit light from the device.

4,267,560
COLOR TELEVISION RECEIVER FOR SIMULTANEOUS DISPLAY OF PLURAL PROGRAMS

Toshiro Ishikawa, Hirakata; Teruo Kitani, Takatsuki, and Takaaki Baba, Nishinomiya, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 29, 1978, Ser. No. 974,548
Claims priority, application Japan, Dec. 29, 1977, 52-157701
Int. Cl.³ H04N *9/535*
U.S. Cl. 358—22 **9 Claims**

1. A color television receiver including means for receiving a first television signal and a second television signal of different channels, means for writing the second television signal in

a memory means, means for reading out the second television signal from said memory means in the form of a television signal compressed in its time axis, and means for inserting said compressed second television signal in a portion of the first television signal to simultaneously display the pictures of the two channels on the same display screen, said receiver comprising:

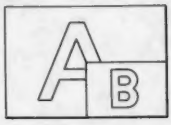
means for deriving a first corresponding luminance signal and a second corresponding luminance signal from said first and second television signals respectively;

means for deriving a first corresponding chrominance signal and a second corresponding chrominance signal from said first and second television signals respectively;

means for demodulating said first and second chrominance signals;

means for separating a first corresponding synchronizing signal and a second corresponding synchronizing signal from said first and second television signals respectively;

means responsive to said second synchronizing signal for generating a writing clock pulse signal for signal writing said memory means;



means responsive to said first synchronizing signal for generating a reading clock pulse signal for signal reading from said memory means, the frequency of said reading clock pulse signal being higher than that of said writing clock pulse signal;

means for separately writing said second luminance signal and said demodulated second chrominance signal in said memory means in response to the application of said writing clock pulse signal;

means for reading out said second luminance signal and said second chrominance signal from said memory means in a relation compressed in the time axis in response to the application of said reading clock pulse signal;

means for adjusting the signal levels of said demodulated first chrominance signal and said demodulated compressed second chrominance signal to maintain a predetermined relationship therebetween; and

signal selecting means for replacing a portion of said first luminance signal and said first chrominance signal by said second luminance signal and said second chrominance signal read out from said memory means.

4,267,561

COLOR VIDEO DISPLAY FOR AUDIO SIGNALS

John R. Karpinsky, 1280 Boynton, #5, Glendale, Calif. 91205, and Thomas G. Moore, 931 Alta Pine Dr., Altadena, Calif. 91001

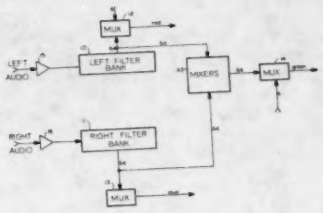
Filed Nov. 2, 1977, Ser. No. 847,708
Int. Cl.³ H04N *9/02*
U.S. Cl. 358—82 **17 Claims**

1. Apparatus for producing a visual display audio comprising:

input means for receiving a pair of input audio signals;

means for generating a third audio signal from said pair of input audio signals;

means for selecting from each audio signal a narrow band of frequencies;



means for converting said three selected narrow band signals into signals representative of a colored dot; and

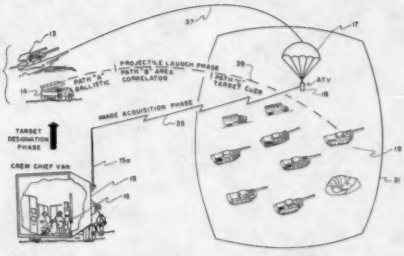
display means for displaying said dot.

4,267,562

METHOD OF AUTONOMOUS TARGET ACQUISITION

Peter K. Raimondi, Woodbridge, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 843,295, Oct. 18, 1977, abandoned. This application Mar. 9, 1979, Ser. No. 19,069
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—109 **10 Claims**



1. A method of autonomous target acquisition for an imaging self guided explosive canister launched by a millitary battery, comprising the steps of:

exposing an active sensor imaging system on a sensor platform to a direct view of an enemy area of a battlefield to obtain a sensed image and transmitting said sensed image therefrom;

receiving said sensed image in a TV receiver of an image processing computer system and converting the sensed TV image from analog to digital while performing enhancement and target cueing algorithms on said sensed TV image and displaying the enhanced targets in digital form on a light sensitive screen of a cathode ray tube;

performing a manipulation of the digitized information on the light sensitive screen by a crew chief man-in-the-loop viewing the sensed TV image display and annotating selected targets to be hit by said military battery imaging self guided explosive canister by a light pen light beam means and manipulation of said image processing computer system which is electrically connected with an on-board microcomputer system within each of a plurality of imaging self guided explosive canisters to assign a specific imaging self guided explosive canister to a specific target wherein said image processing computer system automatically provides said microcomputer with a digital target map of the sensed TV image including the crew chief manipulated annotated target;

launching said imaging self guided explosive canister toward the battlefield enemy area while unshielding a canister active imaging system wherein said canister active imaging system provides said microcomputer system with a continuous sensed image picture of said enemy area; and

automatically sequencing a program stored within said microcomputer system for matching said digital target map to said continuous sensed image by rotating said digital target map using mathematical algorithms to match said annotated target to its spatial position of said continuous sensed image picture of said enemy area and after the matching step is complete activating a terminal guidance system for autonomous guidance of said canister to said annotated target.

4,267,563

CHANNEL SELECTING APPARATUS FOR USE WITH SIGNAL RECEIVER AND SIGNAL RECORDER

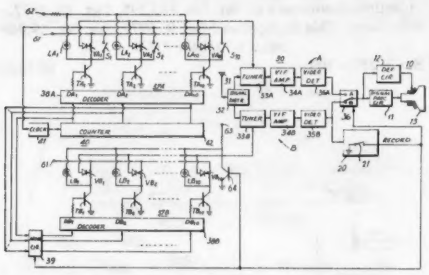
Masaru Sato, Asaka, and Toshio Amano, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 20, 1978, Ser. No. 971,553

Claims priority, application Japan, Dec. 21, 1977, 52-154066; Dec. 24, 1977, 52-155887

Int. Cl.³ H04N *5/78*

U.S. Cl. 358—127 **12 Claims**



1. Channel selecting apparatus for use with a signal receiver coupled to a first tuning means and a signal recorder coupled to a second tuning means, said channel selecting apparatus being operable to tune said first and second tuning means to preselected channels for receiving information transmitted via selected broadcast frequencies, and comprising:

selectively operable channel selecting means common to said first and second tuning means for generating and supplying channel selector signals to said first and second tuning means to determine the tuning condition of both said tuning means;

locking means operative in response to the actuation of said signal recorder to lock said second tuning means to the tuning condition determined by the channel selector signal generated by said channel selecting means immediately prior to said actuation of said signal recorder regardless of the subsequent generation of different channel selector signals by said channel selecting means, said locking means being operative in response to the non-actuation of said signal recorder to permit said channel selector signals generated by said channel selecting means to control the tuning condition of both said first and second tuning means together; and

switch means having first and second inputs coupled to said first and second tuning means, respectively, to receive the information contained in the channels to which said first and second tuning means are tuned, and an output coupled to said signal receiver, said switch means being operative when said signal recorder is not actuated to connect said output thereof to said second input and being operative when said signal recorder is actuated to connect said output thereof to said first input; whereby the information transmitted via the broadcast frequency received by said second tuning means is supplied to said signal receiver when said signal recorder is not actuated and the information transmitted via the broadcast frequency received by said first tuning means is supplied to said signal receiver when said signal recorder is actuated.

4,267,564

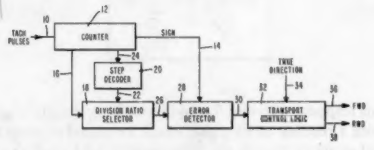
APPARATUS FOR CONTROLLING AND STOPPING A TRANSPORT MECHANISM AT A PREDETERMINED CUE POINT

Charles A. Flores, Fremont, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed May 9, 1979, Ser. No. 37,262

Int. Cl.³ G11B *15/48, 19/06*

U.S. Cl. 360—72.3 **14 Claims**



1. Apparatus for controlling a medium transport mechanism for stopping the medium at a predetermined cue location, comprising:

tachometer means for providing an electrical pulse for each predetermined incremental distance moved by said medium;

means for counting said pulses, the difference between the accumulated count and the count corresponding to said cue point location providing a measurement of the distance to the cue point location, wherein said counting means has a number of outputs extending to said command signal generating means, each of said output lines having a signal frequency that is a different integral division of the tachometer signal frequency;

means responsive to said instantaneous count and to the medium velocity for selectively generating deceleration and acceleration command signals, said generating means generating a deceleration command signal in response to said velocity exceeding predetermined values at selected predetermined counts and generating an acceleration command signal when said velocity is below the predetermined values corresponding to predetermined counts, as said medium approaches said cue point location, said predetermined values successively decreasing in a stepped manner as said predetermined counts approach said cue point location;

said means for selectively generating including means for selecting one of said division frequency output signals and applying the same to means for detecting an overspeed condition, said selecting means successively applying a lesser division frequency output signal at said selected predetermined counts as the cue point location is approached; and

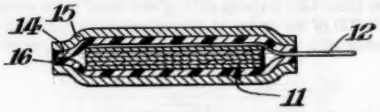
said means for detecting an overspeed condition comprising means for measuring the period of said division frequency output signal applied thereto and providing an overspeed indication signal when said measured period exceeds a first predetermined time duration.

4,267,565

COPPER ENCASED FLAT ELECTROLYTIC CAPACITOR MANUFACTURE AND CAPACITOR

Henry F. Puppolo, North Adams, and Mark Markarian, Williamstown, both of Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Apr. 2, 1979, Ser. No. 26,467
Int. Cl.[3] H01G 9/00; B01J 17/00
U.S. Cl. 361—433 7 Claims



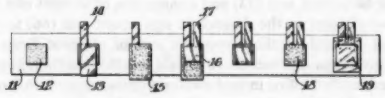
1. A copper-encased sealed flat capacitor comprising a flat impregnated capacitor section with associated spacers and electrode tabs, said section being housed between two layers of an insulating heat-sealable polymer-copper laminate, the polymer portion of both of said layers being adjacent said section and sealed together around the periphery thereof, one of said electrode tabs contacting the copper portion of one of said layers and the other of said electrode tabs contacting the copper portion of the other of said layers.

4,267,566

SEALED FLAT ELECTROLYTIC CAPACITOR AND METHOD

Joseph A. Moresi, Jr., Oak Ridge, Tenn., assignor to Sprague Electric Company, North Adams, Mass.

Filed Apr. 2, 1979, Ser. No. 26,469
Int. Cl.[3] H01G 9/00; B01J 17/00
U.S. Cl. 361—433 3 Claims



1. A flat electrolytic capacitor comprising an etched and anodized foil anode bearing an electrode tab, an etched foil cathode bearing an electrode tab, said anode foil being of substantially the same width and approximately one-half the length of said cathode foil, said anode foil being within a fold of a first spacer, said cathode foil being folded once to overlie both sides of said anode and said first spacer and to cover both sides of said anode, said folded cathode being within a fold of a second spacer, said first and said second spacers being impregnated with an electrolyte, thereby providing said electrolyte in contact with both sides of said anode and both sides of said cathode, said tabs being laterally spaced from each other and extending beyond the edges of said spacers; said foils, said spacers, and a portion of said tabs being heat-sealed between layers of polymer.

4,267,567

ELECTRIC IGNITER

Kurt Nygaard; Kjell Mattsson, and Sven-Erik Bratt, all of Karlskoga, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

Filed Apr. 10, 1978, Ser. No. 895,181
Claims priority, application Sweden, Apr. 19, 1977, 7704435
Int. Cl.[3] F42B 9/08
U.S. Cl. 362—46 16 Claims

1. An improved electric igniter, comprising:

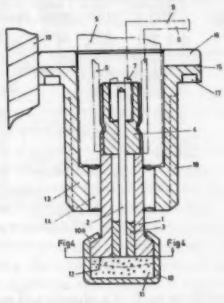
a first electrically conductive element having a first end surface;

a second electrically conductive element have a second end surface;

an electrically insulating body having a third end surface, said body joining and electrically isolating said first and second electrically conductive elements, the coefficients of thermal expansion of said body and said electrically conductive elements being such that the joints between said elements and said body remain tight independent of temperature variations in the range of $-40°$ C. to $+60°$ C., and that said body is clamped between said first and second elements in said temperature range, said first and second elements being formed from a material which has a good wetting effect when contacted by the molten materials of said body;

a flat surface extending across and including said end surfaces of said elements and said body;

at least one electrically conductive bridge element comprising a layer of electrically conductive material having a thickness of up to 12×10^{-8} m., said layer being deposited directly on said flat surface to extend between said end surfaces of said first and second conductive elements and across said end surface of said body and being divided, by grooves extending through said layer to said flat surface, into at least one bar-shaped portion joining a first portion of said layer, said first portion being electrically connected to said first electrically conductive element, to a separate, second portion of said layer, said second portion being electrically connected to said second electrically conductive element; and



a pyrotechnical composition directly contacting said bridge element under pressure,

whereby when current is passed through said bridge element via said first and second electrically conductive elements, said bridge element generates sufficient heat to ignite said pyrotechnical composition.

4,267,568

INFORMATION STORAGE AND RETRIEVAL SYSTEM

Thomas E. Dechant, Bainbridge, Ohio; Edward L. Glaser; Paul E. Pitt, both of Santa Monica, Calif., and Frederick Way, Cleveland Heights, Ohio, assignors to System Development Corporation, Santa Monica, Calif.

Continuation of Ser. No. 637,511, Dec. 3, 1975, Pat. No. 4,068,298. This application Nov. 1, 1977, Ser. No. 847,561
The portion of the term of this patent subsequent to Jan. 10, 1995, has been disclaimed.
Int. Cl.[3] G06F 15/40
U.S. Cl. 364—200 36 Claims

1. A method utilizing digital data processing means for creating a multi-layer data base in a store and for reproducing the data base comprising the steps of:

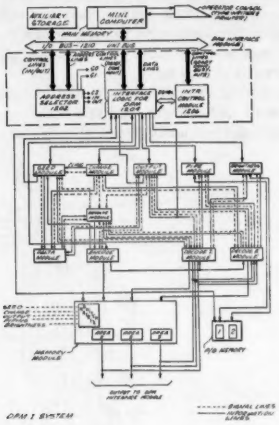
(a) receiving as input a sequence of first level events which represent a sequence of first level entries, the first level

entries forming a sequence of second level events within a plurality of second level entries;

(b) utilizing the events and entries, received as input, for creating a multi-layer data base in the store including the steps of:

(1). forming digitally coded signals in a first data base layer representing the order of occurrence of first level events in each of a plurality of first level entries, and

(2). forming digitally coded signals in a second data base layer representing the order of occurrence of second



level events in each of a plurality of second level entries, each of a plurality of second level events represented in the second layer having a corresponding first level entry represented in the first layer, such first level entry being represented by the order of occurrence of first level events within such first level entry; and

(c) reproducing events and entries in the same order received as input utilizing the first data base layer to order first level events and utilizing the second data base layer to order first level entries within second level entries.

4,267,569

MICRO-COMPUTER SYSTEM FOR CONTROL AND DIAGNOSIS OF MOTOR VEHICLE FUNCTIONS

Heinrich Baumann, Schwieberdingen, and Günther Schmidt, Ludwigsburg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 25, 1979, Ser. No. 42,359

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1978. 2824190

Int. Cl.[3] **G06F** *15/20;* **G05B** *15/02;* **F02D** *5/02*

U.S. Cl. 364—431 **9 Claims**

1. In a motor vehicle, the combination of

apparatus forming part of the motor vehicle for electronically controlling functional elements of the vehicle and their operating functions including at least one of: ignition firing; fuel injection,

wherein the apparatus includes

an on-board microcomputer system **(62)** comprising a microprocessor unit **(10)**, at least one fixed value memory unit **(12-ROM, PROM, EPROM)** storing operating and function data of the vehicle, a working memory unit **(11-RAM)**, an input/output unit **(13)**, a data bus **(14)** and an address bus **(15)**, said buses interconnecting said units;

at least one signal source **(U, T, L, 30-39)** coupled to a functional element of the motor vehicle and a signal processing circuit **(29)** connected to the respective signal source and providing one or more vehicle function parameter-dependent signals to the input/output unit **(13)**;

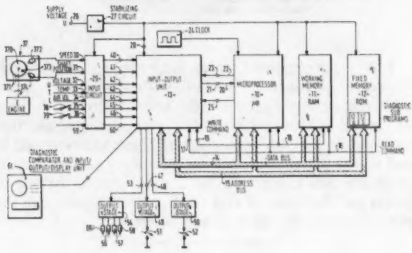
and at least one output element **(47-58)** connected to and controlled by said input/output unit, coupled to a functional element of the motor vehicle and controlling an operating function of the vehicle;

with

a monitoring and supervisory apparatus connectable to receive at least one vehicle function parameter-dependent signal derived from at least one of said signal sources, including

a diagnostic equipment unit **(61)** connected to the input/output unit **(13)** and having a comparison diagnostic unit **(61)**;

means **(12*a*, 12*b*)** forming part of said fixed value memory unit **(12)** of the on-board microcomputer system **(62)** for storing data representative of a diagnostic program in-



cluding data representative of predetermined operating functions and diagnosis test command data, and connection means **(14,15)** for selectively connecting (a) data representative of the diagnostic program into said microcomputer system **(62)** for processing in accordance with the diagnosis test command data; and (b) data representative of predetermined operating functions to said input/output unit **(13)** and connection of at least one output element to the diagnostic equipment unit **(66)** to permit control of the respective output element from the stored data representative of said functions upon failure or malfunction of or in said microcomputer system **(62)** or in one of said signal sources.

4,267,570

CONTROL UNIT FOR MULTI-PHASE STATIC CONVERTER

Rüdiger Braun, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 31, 1979, Ser. No. 62,304

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1978, 2836573

Int. Cl.[3] **H02M** *7/515*

U.S. Cl. 364—480 **4 Claims**

1. A control unit for a multiphase static converter comprising:

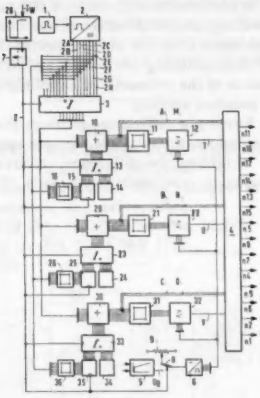
an oscillator;

a number of adders having summation outputs and first and second addend inputs;

a binary coded counter driven by the oscillator and having counter outputs which are coupled to the first addend inputs of the adders;

means for supplying phase angle inputs to the second addend inputs of the adders; and

a logic circuit coupled to the summation outputs of the adders for deriving timing pulses and interlinking them to



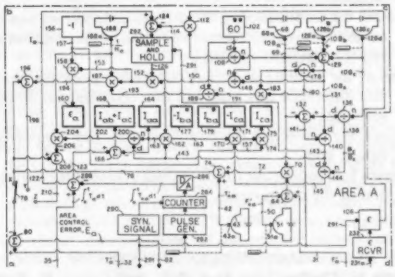
form firing pulses for the controlled valves of the converters.

4,267,571

ENERGY CONSERVATION BY IMPROVED CONTROL OF BULK POWER TRANSFERS ON INTERCONNECTED SYSTEMS

Nathan Cohn, Jenkintown, Pa., assignor to Network Systems Development Associates, Jenkintown, Pa.

Filed May 16, 1979, Ser. No. 39,459
Int. Cl.³ G06G *7/635*
U.S. Cl. 364—493 **64 Claims**



1. In an interconnected electric power system including a plurality of control areas, each of said areas including at least one turbine-generator unit, said system operating under a set frequency schedule and a selected net interchange power transfer schedule for each of its constituent control areas, and wherein each of said constituent control areas utilizes a frequency-biased net interchange control system to fulfill its operating objective of maintaining a zero-error summation of its regulating states by automatically adjusting area generation in order

to match changes in area load,

to maintain area net interchange power transfers at a preset schedule when system frequency is on schedule,

to deviate from said area net interchange power transfer schedule as a function of system frequency deviation when system frequency deviates from schedule,

to participate in control of system frequency,

to participate in correction of accumulations in the system memory parameter representing system time deviation, and

to correct for accumulations in the area memory parameter representing area inadvertent interchange,

and wherein the system time deviation is a total measure of the algebraic summation during a designated time span of the regulating states in all areas of the interconnected system, and consists of and is equal to the algebraic sum of area-caused components of varying magnitudes and signs including zero, in number equal to the number of constituent control areas, and each of which is an area memory parameter totally representative of the algebraic summation of the regulating states of said area during said designated time span, and each of which is separable from all other components independently of their respective magnitudes and algebraic signs, and the magnitude and sign of each is determinable utilizing known or measurable area and system parameters, the improvement comprising the method of measuring and utilizing said area-caused component of system time deviation for a particular area, including the following steps:

generating first signals corresponding to selected parameters of said particular area including the area frequency-bias setting and the area memory parameter representing the measured total inadvertent interchange accumulated during said designated time span;

combining said first signals with second signals corresponding to selected system parameters common to all areas including the measured system time deviation accumulated during said designated time span and the sum of the frequency-bias settings for all areas, to separate and measure the magnitude and sign of a new area memory parameter representing the component of system time deviation caused by the algebraic summation of regulating states in said particular area during said designated time span, and which is a total measure in units of time deviation, of the control performance of said particular area during said designated time span, and

generating control signals for controlling the area generation through adjustment of the energy input to one or more area turbine-generator units so as to create an area regulating state that will simultaneously reduce toward zero said new area memory parameter as well as the primary component of the total inadvertent interchange of the area representing the portion of area total inadvertent interchange self-caused by regulating deficiencies of the area, and the secondary component of total inadvertent interchange of each remote area representing the portion of total inadvertent interchange of each said remote area caused by said regulating deficiencies of said particular area, by offsetting the frequency schedule of the frequency biased net interchange control system of said particular area to an extent that is a function of said new area parameter.

17. In an interconnected electric power system including a plurality of control areas, each of said areas including at least one turbine-generator unit, said system operating under a set frequency schedule and a selected net interchange power transfer schedule for each of its constituent control areas, and wherein each of said constituent control areas utilizes a frequency-biased net interchange control system to fulfill its operating objective of maintaining a zero-error summation of its regulating states by automatically adjusting area generation in order

to match changes in area load,

to maintain area net interchange power transfers at a preset schedule when system frequency is on schedule,

to deviate from said area net interchange power transfer schedule as a function of system frequency deviation when system frequency deviates from schedule,

to participate in control of system frequency,

to participate in correction of accumulations in the system memory parameter representing system time deviation, and

to correct for accumulations in the area memory parameter representing area inadvertent interchange,

and wherein the system time deviation is a total measure of the algebraic summation during a designated time span of the regulating states in all areas of the interconnected system, and consists of and is equal to the algebraic sum of area-caused components of varing magnitudes and signs including zero, in number equal to the number of constituent control areas, and each of which is an area memory parameter totally representative of the algebraic summation of the regulating states of said area during said designated time span, and each of which is separable from all other components independently of their respective magnitudes and algebraic signs, and the magnitude and sign of each is determinable utilizing known or measurable area and system parameters, the improvement comprising means for measuring and utilizing said area-caused component of system time deviation for a particular area, including:

first means for identifying the particular area by selecting the area parameters related thereto including the area frequency-bias setting and the area memory parameter representing the measured total inadvertent interchange accumulated during said designted time span;

second means coupled to said first means for utilizing the selected area parameters in combination with system parameters common to all areas including the measured system time deviation accumulated during said designated time span and the sum of the frequency-bias settings for all areas, to separate and measure the magnitude and sign of a new area memory parameter representing the component of system time deviation caused by the algebraic summation of regulating states in said particular area during said designated time span, and which is a total measure in units of time deviation, of the control performance of said particular area during said designated time span, and

third means coupled to said second means for controlling the area generation through adjustment of the energy input to one or more area turbine-generator units so as to create an area regulating state that will simultaneously reduce toward zero said new area memory parameter as well as the primary component of the total inadvertent interchange of the area representing the portion of area total inadvertent interchange self-caused by regulating deficiencies of the area, and the secondary component of total inadvertent interchange of each remote area representing the portion of total inadvertent interchange of each said remote area caused by said regulating deficiencies of said particular area, by offsetting the frequency schedule of the frequency biased net interchange control system of said particular area to an extent that is a function of said new area parameter.

4,267,572

APPARATUS FOR DETERMINING THE CONCENTRATION OF THE COMPONENTS OF A SAMPLE

Wolfgang Witte, Uberlingen, Fed. Rep. of Germany, assignor to Bodenseewerk Perkin-Elmer & Co., Uberlingen, Fed. Rep. of Germany

Filed Apr. 3, 1979, Ser. No. 26,710

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1978, 2815284

Int. Cl.³ G06F *15/20*

U.S. Cl. 364—498 **4 Claims**

1. Apparatus for determining the concentration of the various components of a sample comprising, in combination,

a spectrophotometer for receiving a sample to be analyzed and performing a fixed number of extinctions of the sample at fixed wavelengths to form a sample spectrum;

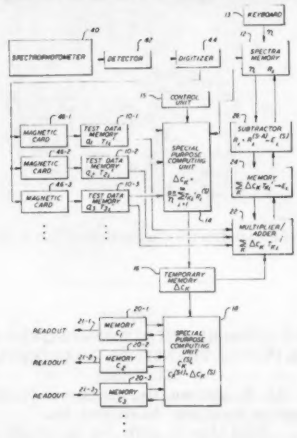
means for forming and storing spectra in standardized form of each of the individual components, by the extinction of standard solutions of the components being looked for, having said fixed number of extinction values measured at said fixed wavelengths;

means for weighting the sample spectrum at different wavelengths in conformity with each of the standard spectra and providing estimated values of the concentrations of the components from the sample spectra thus weighted;

means for reconstructing the sample spectrum as a linear combination of the estimated values of the concentrations and the standard spectra;

means for forming a difference spectrum from the sample spectrum and the reconstructed sample spectrum;

means for weighting the difference spectrum at different wavelengths in conformity with each of the standard



spectra and providing corrective values of the concentrations of the components from the difference spectrum thus weighted;

means for reconstructing the difference spectrum as a linear combination of the corrective values of the concentrations and the standard spectra;

means for forming a second difference spectrum from the first difference spectrum and the reconstructed difference spectrum;

means for correcting the estimated values by the corrective values; and

means for reading out the corrected values of the concentration of the components.

4,267,573

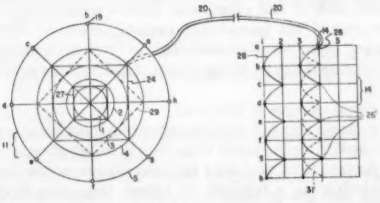
IMAGE PROCESSING SYSTEM

George M. Chaikin, New York, N.Y., and Carl F. R. Weiman, Norfolk, Va., assignors to Old Dominion University Research Foundation, Norfolk, Va.

Filed Jun. 14, 1978, Ser. No. 915,453

Int. Cl.³ G06F *3/14*

U.S. Cl. 364—515 **50 Claims**



1. An image processing system comprising: means for con-

verting the image to be processed into a plurality of representative image cells; and

means for concurrently arranging representations of said cells in accordance with a predetermined pattern to produce a geometrically transformed representation of the image, successive geometric transformations of the image being congruent irrespective of changes in scale or angular orientation of the image.

4,267,574

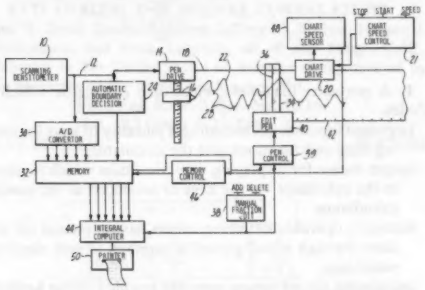
DISPLAY AND PROCESSOR FOR TIME-VARYING ELECTRIC SIGNAL

Jan A. Vanden Broek, Ann Arbor, Mich., assignor to Transidyne General Corporation, Ann Arbor, Mich.

Filed Feb. 12, 1979, Ser. No. 11,295

Int. Cl.³ G06K *1/18*

U.S. Cl. 364—520 **14 Claims**



1. In an electronic system including means for forming a visually readable graphic record of a time varying electric signal, a recording device, means for relatively moving a recording medium with respect to said recording device, said recording device including means creating said visually readable record on said recording medium; cursor reference means providing a visual reference point on said graphic record displaced from said recording device along the direction of relative motion of said recording medium and said recording device; a memory receiving and storing values of said time varying signal; signal processing means processing said stored time varying signal values after a delay corresponding to said time required for motion of said recording medium from said recording device to said cursor reference means reference point; the improvement comprising: synchronizing means for synchronizing the processing of said stored time varying signal values with the movement of the graphic record of said values to said reference point, said means including means generating a control signal corresponding to the relative movement of said recording medium and also including means causing execution of said processing of said stored signal values upon generation of the control signal corresponding to movement of said graphic record corresponding to said stored signal values to said reference point.

4,267,575

WHEEL SPEED SIGNAL-PRODUCING SYSTEM FOR SKID CONTROL

Peter Bounds, Simi Valley, Calif., assignor to The Bendix Corporation, North Hollywood, Calif.

Filed Jul. 9, 1979, Ser. No. 55,730

Int. Cl.³ G01P *3/48*

U.S. Cl. 364—565 **6 Claims**

1. In a skid control system for a vehicle having at least one wheel including a brake on said wheel and brake-actuating means, operator-operated means for operating said actuating means, a control element for overriding said operator-operated means, and an electronic control system including a microprocessor having means generating a series of uniform sample pulses and means producing a signal in response to decelerations in excess of a desired value for operating said control element, said deceleration-responsive means including means generating a digital signal responsive to rotational speed of said wheel:

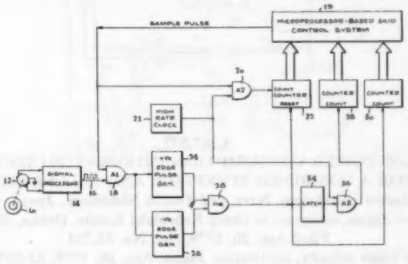
characterized in that said rotational wheel speed signal-generating means comprises

sensor means including signal-processing means generating a series of pulses whose frequency varies with the rotational speed of said wheel,

a digital clock producing clock pulses at a rate substantially greater than the pulse frequency of said sensor means and the frequency of said sample pulses,

a first AND gate connected to receive said sample pulses and said sensor pulses to enable said sensor pulses during the period of said sample pulses,

pulse-generating means receiving said sensor pulses from said first AND gate producing narrow marker pulses whenever the leading edge or the trailing edge of said sensor pulses occurs within the period of a sample pulse,



a second AND gate connected to receive said sample pulses and said clock pulses and conducting said clock pulses during the period said sample pulses are present, first counter means having reset means connected to receive said marker pulses and receiving said clock pulses from said second AND gate such that said first counter means is reset with each marker pulse and said first counter means counts said clock pulses during the period of said sample pulse subsequent to receipt of the last of said marker pulses,

a third AND gate connected to receive said narrow marker pulses and said clock pulses to enable clock pulses during the period of said sample pulse subsequent to receipt of said first marker pulse and a second counter connected to count said clock pulses from said third AND gate,

a third counter connected to count said marker pulses, and means connecting the counts of said first, second and third counters to said microprocessor at the end of each sample period.

4,267,576

INTERCONNECTION SYSTEM FOR A BIOLOGICAL WAVEFORM SIMULATOR DEVICE

Joseph S. Power, Fraser, and Frederick B. Ruszala, Sterling Heights, both of Mich., assignors to The Valeron Corporation, Troy, Mich.

Filed Nov. 9, 1979, Ser. No. 93,086

Int. Cl.³ H01R *13/11*

U.S. Cl. 364—578 **10 Claims**

1. An interconnection system for a simulator device for testing the operability of a biological waveform sensing machine, said system comprising:

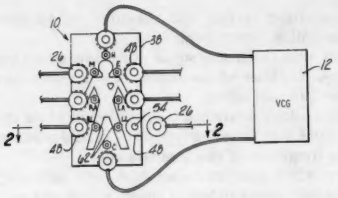
a housing having a major surface;

a circuit board within the housing and containing electrical circuitry for generating an output signal for testing the operability of a biological waveform sensing machine;

a plate affixed to the major surface of the housing, said plate

having an undercut slot adapted to receive a disc-shaped electrode from the machine; and

first connector means disposed in the slot for electrically



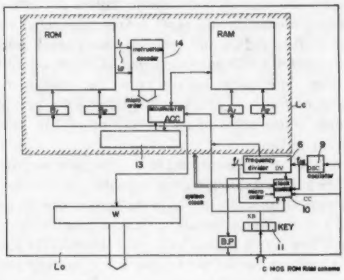
connecting said electrode when engaged in said slot with the circuitry whereby said electrode may be removably inserted into said slot to couple the output signal to said machine for testing its operability.

4,267,577

LOW POWER CONSUMPTION INTEGRATED CIRCUIT FOR A COMBINED TIMEPIECE AND CALCULATOR

Shintaro Hashimoto, Nara, and Toshio Nishimura, Jyoyo, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 26, 1979, Ser. No. 33,711
Claims priority, application Japan, Apr. 28, 1978, 53-53139
Int. Cl.[3] G06F *15/02;* **G04B** *47/00*
U.S. Cl. 364—707 **9 Claims**



1. An integrated circuit device having at least a timekeeping function comprising:

generator stage means for generating basic clock signals and system clock signals, the system clock signals being obtainable by modifying the basic clock signals;

processor stage means responsive to a supply of the system clock signals for executing operation required for the timekeeping function and for generating a command signal to indicate the completion of the operations associated with the timekeeping function;

key input means for introducing information into the processor stage and generating key input signals indicative of said information; and

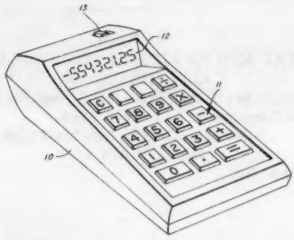
clock control means for permitting said supply of the system clock signals to energize the processor stage in response to the rising and trailing edges of said key input signals and for preventing the supply of the system clock signals from energizing the processor stage means in response to the command signal from the processor stage means.

4,267,578

CALCULATOR SYSTEM WITH ANTI-THEFT FEATURE

Edward O. Vetter, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 26, 1974, Ser. No. 500,420
Int. Cl.[3] G06F *7/00*
U.S. Cl. 364—709 **24 Claims**



1. A portable, hand-held, electronic calculator which includes:

keyboard input means including a plurality of keys for entering data and functions into the calculator;

output means for displaying numerical data which is entered in the calculator via the keys or produced as the result of calculation;

manually operable switching means having on and off positions through which power is supplied to said electronic calculator;

calculating circuit means operably coupled to the keyboard input means and the output means to perform the normal calculation functions of the calculator; the improvement comprising:

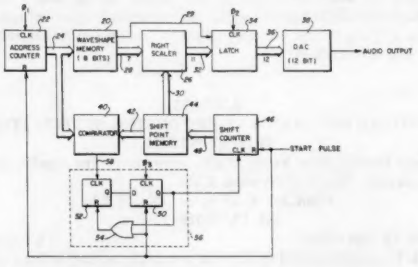
code-responsive means coupled to the keyboard input means and to the calculating circuit means to render the calculator unable to perform normal calculation functions after the switching means is switched from off to on until an anti-theft code is properly entered to said code responsive means from said keyboard input means.

4,267,579

DIGITAL WAVEFORM GENERATOR HAVING CONSTANT SIGNAL TO NOISE RATIO

Glenn M. Gross, Chicago, Ill., assignor to Norlin Industries, Inc., Deerfield, Ill.

Filed Jul. 13, 1979, Ser. No. 57,187
Int. Cl.[3] G06F *1/02, 15/34*
U.S. Cl. 364—718 **14 Claims**



1. The method of forming a binary representation of an analog waveform of the type having a gradually decaying or increasing envelope comprising the steps of:

sampling said waveform for producing a sequence of n-bit binary samples representative thereof;

sequentially storing in a memory a predetermined number of the resolution contributing bits of each of said n-bit samples, said predetermined number being less than n;

sequentially recalling said stored samples from said memory; and

scaling each of said recalled samples for conversion to an n-bit signal having a magnitude corresponding to the magnitude of the associated n-bit sample.

4,267,580

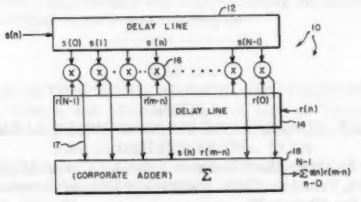
CCD ANALOG AND DIGITAL CORRELATORS

James W. Bond; James M. Alsup; Jeffrey M. Speiser; Harper J. Whitehouse, and Isaac Lagnado, all of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 8, 1979, Ser. No. 1,516

Int. Cl.[3] G06G 7/19; G06J 1/00

U.S. Cl. 364—824 **12 Claims**



AN ANALOG CONVOLVER/PROGRAMMABLE FILTER

1. A convolver comprising:

a first, multi-tap, delay line at one end of which, for example the left end, is applied a signal s(n), the signals at the outputs of the various taps, starting from the left end, being s(0), s(1), . . . , s(N−1);

a second N-tap delay line, at the right end of which is applied a signal r(n), the outputs of this delay line, from the right end of the delay line, being r(0), r(1), . . . , r(N−1);

a plurality of N means for multiplying having two inputs, one input from each of the two delay lines, being paired as follows: the s(0)th tap of the first delay line and the r(N−1)th output of the second delay line being connected to the left most means for multiplying, the s(1)th output of the first delay line and the r(N−2)th output of the second delay line being connected to the second means for multiplying, etc.; each means for multiplying comprising:

a means for generating the signal corresponding to the square of the signal [s(n)+r(m−n)];

a means for generating the signal $s^2(n)$;

a means for generating the signal $r^2(m-n)$; and

a means for taking the difference between the first-named signal and the other two signals to result in a remainder signal [2s(n)r(n−m).]2s(m)r(m−n); the convolver further comprising:

a means for adding the N outputs of the multipling means the output of the adding means being the summation from n=0 to N−1 of the quantity s(n)r(m−n); wherein:

all of the signals involved, including s(n), r(n) and s(n) r(m−n), are modulo numbers; and wherein

the first and second delay lines, the multiplying means and the means for adding are implemented as charge-coupled devices.

4,267,581

MEMORY ADDRESS DESIGNATING SYSTEM

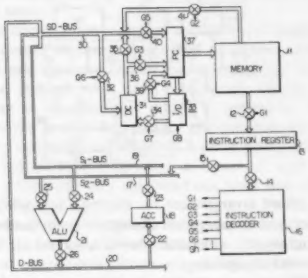
Ichiro Kobayashi, Kawasaki; Yoshiaki Moriya, Inagi, and Yukio Kitagawa, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Mar. 5, 1979, Ser. No. 17,572

Claims priority, application Japan, Mar. 6, 1978, 53-25280

Int. Cl.[3] G06F 9/36

U.S. Cl. 364—900 **8 Claims**



1. A memory address designating system comprising:

a memory for addressably storing program data and non-program data;

a first register coupled to said memory for storing a first address designating a first location in said memory;

a second register for storing a second address designating a second location in said memory;

an address modifying circuit coupled to said first register for selectively modifying said first address stored in said first register;

a first loop transfer path including a first gate circuit coupling the output of said address modifying circuit to said first register to enable a selective transfer of an address in said first loop transfer path comprising said first register, said address modifying circuit, and said first gate circuit;

a second loop transfer path including a second gate circuit coupling the output of said address modifying circuit to said second register and a third gate circuit coupling said second register to said first register to enable a selective transfer of an address in said second loop transfer path comprising said first register, said address modifying circuit, said second gate circuit, said second register, and said third gate circuit; and

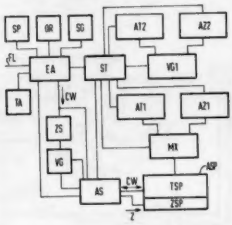
a transfer path controlling means coupled to said memory and responsive to said stored program data and non-program data for controlling said first, second, and third gate circuits, said first register, said second register, and said address modifying circuit to (1) enable the transfer of a said address from said first register to said address modifying circuit to generate a modified first loop address and control said first gate circuit to enable the transfer of said modified first loop address back to said first register, and (2) enable the simultaneous transfer of said address from said first register to said address modifying circuit to generate a modified second loop address and the transfer of said modified second loop address to said second register, and said address from said second register through said first register to said third gate circuit.

4,267,582

CIRCUIT ARRANGEMENT FOR STORING A TEXT

Gerd Thomanek, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 17, 1978, Ser. No. 925,276
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1977, 2748859
Int. Cl.[3] G06F *7/06*
U.S. Cl. 364—900 5 Claims



1. A circuit arrangement for storing a text which comprises characters and combination characters composed of a plurality of characters, the characters being assigned code words, the arrangement comprising:

memory means including a text memory for storing in primary group code words of individual first characters and of second characters which are portions of combination characters, and for storing in hierarchically classified subsidiary groups code words of third characters which are portions of combination characters, and an assignment memory for storing assignment data associated with the respective primary and subsidiary groups and which indicate the position and number of character positions of each primary and subsidiary group; and

control means for generating assignment code connected to said memory means for inputting the code words and the assignment data into said text and assignment memories, said control means comprising

code word generating means, and

a comparator connected between said code word generating means and said text memory for comparing in accordance with predetermined criteria, code words to be input and code words already stored, and which is operable in response to the comparison in a first time to store the input code words and in a second time to exchange code words already stored in primary and subsidiary groups with code words stored in the particular next lower subsidiary group,

said comparator comprising means for comparing the code words in accordance with the values of the sequence of their binary characters considered as binary numbers as the predetermined criteria.

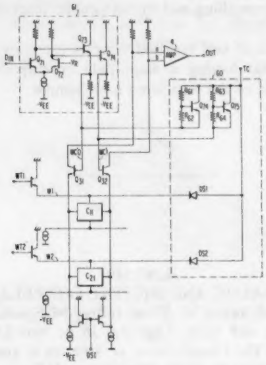
4,267,583

MEMORY TEST DEVICE WITH WRITE AND PSEUDO WRITE SIGNALS

Masao Suzuki, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Nov. 27, 1979, Ser. No. 97,625
Claims priority, application Japan, Nov. 27, 1978, 53-146176
Int. Cl.[3] G11C *29/00*
U.S. Cl. 365—201 17 Claims

1. A memory device comprising a plurality of memory cells, selection means for selecting one of said memory cells, first write control means which operates in a normal write mode, and second write control means which operates in a pseudo write mode to supply a signal lower than a threshold value at



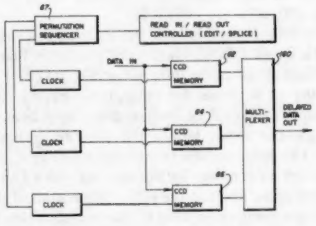
which the content of the normal memory cell is changed, to the memory cell to be tested.

4,267,584

PERMUTATING ANALOG SHIFT REGISTER VARIABLE DELAY SYSTEM

Ronald E. McKeighen, Hoffman Estates, Ill., and Michael P. Buchin, Palo Alto, Calif., assignors to Siemens Gammasonics, Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 812,109, Jul. 1, 1977, Pat. No. 4,173,007. This application Jun. 18, 1979, Ser. No. 50,002
Int. Cl.[3] G01S *15/89*
U.S. Cl. 367—11 5 Claims



1. In an ultrasonic imaging system having a plurality of electro-acoustic transducer elements, disposed in a predetermined arrangement and positionable relative to a patient anatomy, and means for energizing said transducer elements and processing echo signals returning thereto in a predetermined sequence thereby launching and receiving a scanned dynamically focused acoustic beam; variable delay means comprising:

a plurality of analog shift register memory devices;

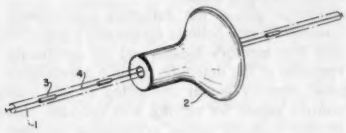
permutation means for sequencing and permutating information storage and retrieval to and from said memory device such that said information storage and retrieval may be independently operated; and

edit/splice means altering the time interval between the operations of said information storage and said information retrieval to produce dynamic variation of system delay.

4,267,585
DEVICE FOR DETERMINING THE CONFIGURATION AND CALIBRATING LONG, TOWED UNDERWATER STRUCTURES

Peter C. Georgallis, Herndon, Va., assignor to Ramcor, Inc., Vienna, Va.

Filed Oct. 15, 1979, Ser. No. 84,660
Int. Cl.[3] H04R *29/00*
U.S. Cl. 367—13 9 Claims

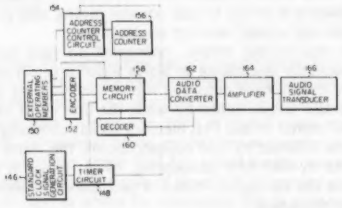


1. A device for determining the configuration of elongated, underwater structures as they are drawn through the water, which comprises a collar adapted to fit around a portion of said underwater structure and possessing sufficient hydrodynamic drag to remain substantially stationary in the water relative to the linear movement of the structure as the structure is drawn through the collar; said device being further adapted to assume the horizontal and vertical position in the water of that portion of said underwater structure being drawn through it; said device further comprising means for registering said horizontal and vertical displacement and communicating this information to an external location or recording it.

4,267,586
ELECTROPHONIC MUSICAL INSTRUMENT

Misao Uchino, and Minoru Watanabe, both of Tokorozawa, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Feb. 21, 1979, Ser. No. 13,119
Claims priority, application Japan, Feb. 22, 1978, 53-19392
Int. Cl.[3] G04C *21/28;* G10H *1/26*
U.S. Cl. 368—73 4 Claims



1. An electronic timepiece in combination with an electrophonic musical instrument, comprising:

a source of a standard high frequency signal;

frequency divider means responsive to said standard high frequency signal for generating a standard frequency signal and a standard time signal;

time display means;

drive means responsive to said standard time signal for driving said time display means to provide a display of time;

memory circuit means having a plurality of addresses for storage of data;

address counter means coupled to said memory circuit means for providing an output signal to select an address of said memory circuit means;

a first control switch coupled to circuit means for selectively enabling writing of data into and reading of data out of an address of said memory circuit means selected by said output signal from said address counter means;

a plurality of data input switches coupled to circuit means for selectively generating data specifying at least the pitch and the duration of a musical note;

a second control switch coupled to circuit means for causing said data generated by said data input switches to be written into an address of said memory circuit means selected by said output signal from said address counter means when writing of data into said memory circuit means is enabled by said first control switch;

a third control switch coupled to circuit means for resetting said address counter to a count of zero;

timing counter circuit means having a count input terminal coupled to receive said standard frequency signal, said timing counter circuit means being responsive to a signal produced by said third control switch for being reset to a count of zero simultaneously with said address counter being reset to zero, and being responsive to said standard frequency signal for counting after having been reset to a count of zero;

comparator circuit means coupled to output terminals of said timing counter circuit and coupled to receive data read out from said memory circuit means indicating the duration of a musical note, said comparator circuit means producing an output signal which is applied to said address counter to thereby advance the contents thereof by a count of one when coincidence is detected by said comparator circuit means between a count of said timing counter circuit and said data read out from said memory circuit means;

circuit means for resetting said timing counter circuit to a count of zero when said coincidence is detected;

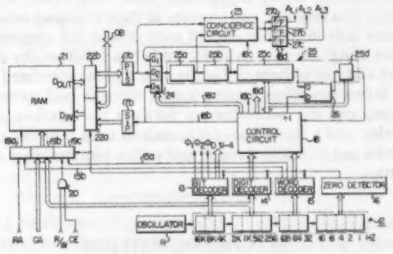
audio signal conversion circuit means coupled to receive data read out of said memory circuit means specifying the pitch of a musical note, and for converting said data into an alternating electrical signal having a frequency corresponding to said specified pitch; and

piezo-electric transducer means responsive to said alternating electrical signal for producing an audible signal.

4,267,587
ELECTRONIC TIMEPIECE CIRCUIT

Mamoru Mizuno, Yamanashi, and Hanzou Tsuzuki, Yamato, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Jan. 26, 1979, Ser. No. 6,925
Claims priority, application Japan, Feb. 17, 1978, 53/17337; Feb. 17, 1978, 53/17338; Feb. 20, 1978, 53/18389
Int. Cl.[3] G04C *19/00*
U.S. Cl. 368—85 10 Claims



1. An electronic timepiece circuit comprising:

an oscillator (**11**) for generating a reference signal;

a frequency dividing circuit means (**12**) coupled to said oscillator (**11**) and having a plurality of frequency dividing stages for dividing the frequency of the reference signal to thereby produce signals at given time intervals;

a RAM (**21**) (random access memory) for storing clock data representing the time, said RAM (**21**) having address positions each of which stores clock data representing a unit of time, which are designated by address signals and which undergoes read-write control achieved by read-write signals;

a shift register (**25**) coupled to said RAM (**21**) for temporarily storing the clock data, said shift register (**25**) having a memory capacity large enough to store all the clock data stored in said RAM (**21**) in order to update the clock data;

a gate circuit means (**19***b*, **19***c*) coupled to said frequency dividing circuit means (**12**) for supplying an address signal and a read-write signal to said RAM (**21**) upon receipt of a signal produced by said frequency dividing circuit means (**12**) at said time intervals; and

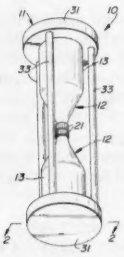
a control circuit means (**18**) for updating the clock data by writing all the clock data from said RAM (**21**) into said shift register (**25**) at the start of the read period of the read-write signal and for writing the updated clock data into said RAM (**21**) at the start of the write period of the read-write signal.

4,267,588

HOURGLASS CONSTRUCTION

Alexander Daniels, 56 Oxcycocus Rd., Manahawkin, N.J. 08050

Filed Dec. 7, 1978, Ser. No. 967,298
Int. Cl.[3] **G04F** *1/04*
U.S. Cl. 368—93 **1 Claim**



1. An hourglass construction comprising a pair of identical light permeable bottles each having an externally threaded mouth, a pair of identical threaded cap closures each having a circular flat top wall extending transversely across a respective bottle mouth and a skirt threadedly circumposed about the mouth of a respective bottle, said bottles being arranged in opposed aligned relation with said cap closures having their top walls in facing engagement with each other, securing means securing said cap closures in their engaging relation, a center hole in the top wall of each of said cap closures, said holes being in registry with each other and each axially aligned with and spaced inwardly of the mouth of the associated bottle to define an orifice communicating through said secured engaging cap top walls directly between the interiors of said bottles, and a fluent material contained in at least one of said bottles and flowable through said orifice into the other of said bottles.

4,267,589

ELECTRONIC WATCHES

Tetsuo Yamaguchi, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Sep. 26, 1979, Ser. No. 79,058
Claims priority, application Japan, Oct. 18, 1978, 53-127292
Int. Cl.[3] **G04F** *8/00;* **G04C** *17/00, 21/16;* **G08B** *3/00*
U.S. Cl. 368—109 **6 Claims**

1. An electronic watch comprising:

an oscillator for generating a timing reference signal;

frequency dividing means for dividing the frequency of the reference signal produced by said oscillator;

counter means connected to said frequency dividing means for counting the number of the outputs of said frequency dividing means;

announcing time setting means for setting a time to be announced;

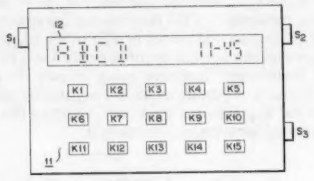
first memory means connected to said announcing time setting means for storing the time to be announced set by said announcing time setting means;

character input means comprising a plurality of types of characters;

character input control means connected to said character input means for encoding characters supplied by said character input means;

comparator means for detecting coincidence of a time counted by said counter means and a preset time stored in said first memory means, and for producing a signal in response to the detection of such coincidence;

second memory means connected to said character input control means for storing said encoded characters, said second memory means comprising decoder means for decoding the encoded characters produced by said second memory means, a first gate circuit group for producing the output signals produced by said decoder means in



accordance with the coincidence detection signal produced by said comparator means, a second gate circuit group for effecting DC-AC conversion of the output signals produced by said first gate circuit group, and a character drive out circuit comprising a group of buffer amplifiers for amplifying the output signals from said second gate circuit group;

display means connected to said counter means and to said second memory means for displaying the contents of the characters stored in said counter means, said preset time and said second memory means; and

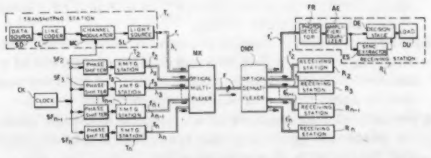
time announcing means, connected to said comparator means for generating an alarm signal in accordance with the coincidence detection signal generated by said comparator means, whereby when the time to be announced and stored in said first memory means coincides with the time counted by said counter means, the alarm is generated by said time announcing means while at the same time the characters stored in said second memory means are displayed.

4,267,590

FIBER-OPTICAL DATA-COMMUNICATION SYSTEM USING CARRIERS OF DIFFERENT WAVELENGTHS

Luciano Bosotti, Turin, Italy, assignor to CSELT, Centro Studi e Laboratori Telecomunicazioni S.P.A., Turin, Italy

Filed Jun. 18, 1979, Ser. No. 49,507
Claims priority, application Italy, Jun. 20, 1978, 68431 A/78
Int. Cl.[3] **H04B** *9/00*
U.S. Cl. 370—3 **11 Claims**



1. In a data-communication system in which data streams are

modulated independently of one another but with cadences based on a common clock frequency upon a plurality of optical carriers of different wavelengths and the carriers so modulated pass between transmitters and receivers over respective channels sharing a common light guide between two terminals, each transmitter including a modulator establishing a predetermined signal period related to said clock frequency for symbols constituting its outgoing data stream,

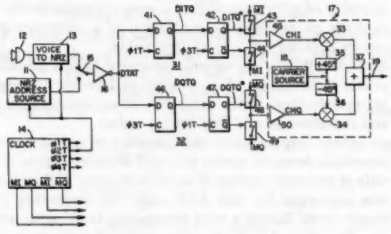
the combination therewith of synchronizing means connected to the modulator of at least one transmitter for staggering the signal period of its outgoing data stream with reference to that of the data stream of at least one other channel, as observed at one of said terminals, by substantially half the signal period of each of said data streams in the case of like signal periods and of the data stream of higher cadence in the case of harmonically related signal periods.

4,267,591

QPSK SUPPRESSED CARRIER WITH ROTATING REFERENCE PHASE

F. A. Wissel, and D. A. Kiliman, both of Cincinnati, Ohio, assignors to Cincinnati Electronics Corporation, Cincinnati, Ohio

Filed Apr. 17, 1979, Ser. No. 30,905
Int. Cl.³ H04J *11/00*
U.S. Cl. 370—11 **40 Claims**



3. A method of transmitting binary coded serial data synchronized to a clock source having a predetermined frequency, said data being capable of tolerating long term polarity ambiguity without performance loss, such as coded voice and address signals, comprising phase modulating a suppressed carrier offset quadrature phase shift key signal having a constant amplitude envelope at the rate of the clock frequency so that the reference carrier phase for successive bits is sequentially phase rotated 90° in the same selected direction in synchronism with the clock source, said reference phase being additionally bi-phase modulated in response to sequential bits of the binary data.

4,267,592

ANTI-JAM RADIO

Robert L. Craiglow, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 30, 1979, Ser. No. 25,527
Int. Cl.³ H04L *5/14*
U.S. Cl. 370—29 **8 Claims**

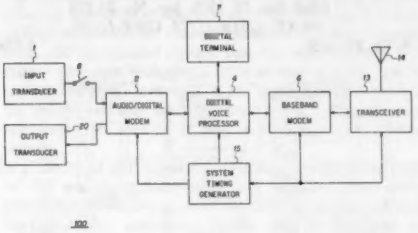
1. An apparatus providing full duplex anti-jam communications with a half duplex transceiver, comprising:

means for storing digital signals into digital packets of a predetermined number of symbols;

means for transmitting each digital packet at a different transmission frequency during a transmission period that is preceded by a preceding guard band and followed by a following guard band;

means for pseudorandomly changing the carrier frequency after the expiration of the following guard band if no digital packet is being received;

means for pseudorandomly changing the carrier frequency after the completion of the reception of a digital packet during the preceding guard band;



means for demodulating a received radio signal obtaining the digital packets therefrom; and

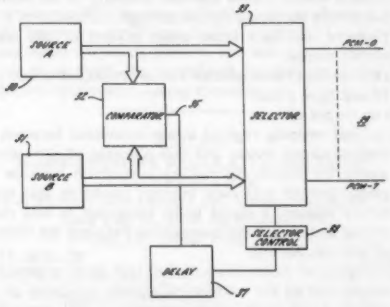
means for converting the digital packet into a received digital signal.

4,267,593

METHOD AND MEANS FOR DIGITAL CONFERENCING

John F. Regan, Lombard, and Bakulesh A. Mehta, Bollingbrook, both of Ill., assignors to Wescom Switching, Inc., Downers Grove, Ill.

Filed Jun. 15, 1979, Ser. No. 48,830
Int. Cl.³ H04M *3/56*
U.S. Cl. 370—62 **8 Claims**



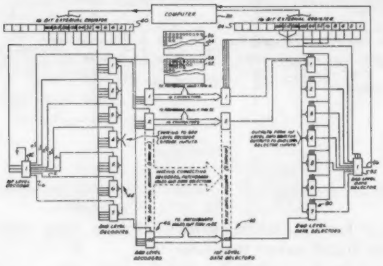
1. In a conference circuit for a digital telecommunications switching system having a comparator for comparing digital samples of conferees and producing an output signal identifying the largest sample, and means for identifying a present speaker and outputting his sample to the conferees during each frame, the improvement comprising, delay means for initiating a delay following detection of a proposed new speaker by said comparator having a sample larger than that of the present speaker, logic means responsive to the comparator and operative during the delay for determining if the proposed new speaker has the largest analog signal during the delay, and means responsive to a positive determination by said logic means and operative upon the identifying means for updating the identity of the present speaker to that of the proposed new speaker.

4,267,594

DECOMMUTATOR PATCHBOARD VERIFIER

John W. Brunson, Titusville, Fla., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 22, 1979, Ser. No. 51,271
Int. Cl.[3] G01R *31/28;* G06F *11/00*
U.S. Cl. 371—20 6 Claims



1. A system for verifying the connections between terminals of a patchboard comprising:

(a) a back plane;

(b) a plurality of plugs provided in said back plane corresponding in number and position to said terminals of said patchboard so that said patchboard that is to be verified can be plugged therein;

(c) a plurality of decoders connected to said plugs of said back plane;

(d) a control circuit means;

(e) memory means connected to said control circuit means, means for storing information in said memory means representing the correct patching program of said patchboard which is being verified;

(f) first stepping register means connected between said control circuit means and said plurality of decoders for selectively supplying signals through said decoders to said plugs of said back plane under control of said control circuit means;

(g) a plurality of data selector means connected to said plugs of said back plane;

(h) an output circuit;

(i) second stepping register means connected between said control circuit means and said plurality of data selector means for selectively making connection between said plugs through said data selector means to said output circuit causing a signal to be produced at said output circuit identifying the connections between the terminals of said patchboard,

(j) comparator means connected to said memory means and output circuit for comparing signals produced at said output circuit with said information in said memory for verifying said connections between terminals of said patchboard; and

(k) said plurality of decoders including:

(i) first, second and third level decoders;

(ii) each of said decoders having input and output terminals;

(iii) means for connecting predetermined input terminals of said decoders to said first stepping register means;

(iv) means for connecting said output terminals of said first level decoders to predetermined input terminals of said second level decoders;

(v) means for connecting said output terminals of said second level decoders to predetermined input terminals of said third level decoders; and

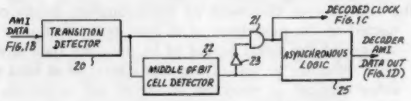
(vi) means for connecting said output terminals of said third level decoders to predetermined plugs of said back frame.

4,267,595

AMI DECODER APPARATUS

Victor M. Hernandez, Roanoke, Va., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Feb. 4, 1980, Ser. No. 118,035
Int. Cl.[3] G11B *5/09*
U.S. Cl. 375—95 11 Claims



1. A decoder apparatus for use in a data transmission system in which information is conveyed in a bit stream consisting of a plurality of sequential bit cells, said stream of the type employing an alternate mark inversion (AMI) code, wherein the start of each bit cell is manifested by a first transition, each bit cell having a given duration T, with those bits indicative of a first binary value further possessing a transition at the center of said bit duration (T/2) to distinguish this first binary value from a second binary bit value with those bits of said second value having no transition at said center, said decoder comprising:

transition detector means responsive to said AMI bit stream for providing at an output, a plurality of pulses indicative of each transition in said AMI bit stream, whereby said plurality of pulses has at least a separate pulse for the start of each bit and a pulse indicative of a transition at the center of those bits of said first value,

center bit cell detector means responsive to said plurality of pulses at the output of said transition detector for responding to only those pulses indicative of said center transition, and therefore of said first binary value,

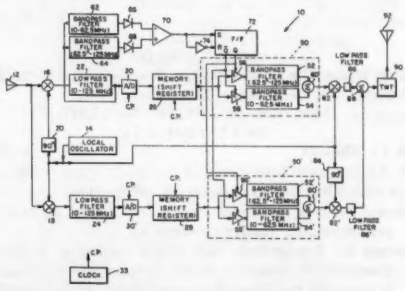
logic means responsive to said plurality of pulses from said transition detector means and said detected pulses to provide at an output, a digital signal indicative of the information conveyed by said AMI code, by outputting a first binary level during a next succeeding start pulse when a transition was detected at the center of a previous pulse, and outputting a second binary level when a transition was not detected, whereby said output digital signal manifests the original information encoded within said AMI bit stream.

4,267,596

DIGITAL MEMORY SYSTEM

Oscar Lowenschuss, Goleta, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Mar. 30, 1978, Ser. No. 891,794
Int. Cl.[3] H04B *15/00*
U.S. Cl. 455—18 4 Claims



1. A digital memory system, comprising:

(a) means, fed by an input signal having a frequency within a predetermined band of frequencies, for producing a control signal indicative of the particular one of a plurality of different portions of the band of frequencies which includes the frequency of the input signal;

(b) means, fed by the input signal, for storing a sequence of one bit digital words, each one of such bits being representative of the amplitude of the input signal and for producing such sequence of stored digital words at an output of the storage means, such sequence of one bit digital words being produced as a train of pulses having a bandwidth greater than the predetermined band of frequencies; and

(c) means, fed by the control signals and the train of pulses produced at the output of the storing means, for coupling to an output of the memory system a selected portion of the bandwidth of the train of pulses, comprising:

(i) a plurality of filters, each one being tuned to a corresponding one of the portions of the predetermined band of frequencies; and

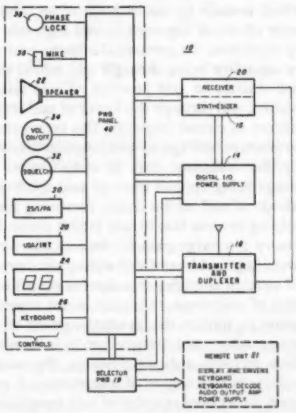
(ii) gating means, responsive to the control signal for passing the sequence of stored digital words produced at the output of the storing means to an output of the system through a selected one of the plurality of filters such selected one of the plurality of filters being the one of such filters which is tuned to the portion of the band of frequencies which includes the frequency of the input signal.

4,267,597

MARINE TELEPHONE RADIO

John P. Volpi, Garland, and Robert R. Kyle, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 5, 1979, Ser. No. 55,108
Int. Cl.[3] H04B *1/40*
U.S. Cl. 455—76 **10 Claims**



1. A communication device comprising:

(a) a plurality of operational controls, said controls including a data entry means for multiple channel number selections for incoming call monitoring, and operational status selecting means for selecting operational functions;

(b) a multiplexer connected to the plurality of operations controls for producing in sequence signals indicative of operator selected channel numbers and operational functions;

(c) a plurality of circuits including logic gates with first input terminals connected selectively to the multiplexer for receiving the electrical signals indicative of selected channel numbers and operational controls, second input terminals for receiving data loading signals, and output terminals;

(d) an encoder selectively connected to the logic gates' outputs for encoding the output signals;

(e) a microcomputer having input terminals connected to the encoder's output terminals for receiving the coded output thereof, said microcomputer operative to produce: loading signals, transmitter inhibiting signals responsively to selected operational function signals, alternately signals indicative of selected channel numbers for receiver scanning, and operational signals, said microcomputer having output terminals including a portion thereof connected to the second input terminals of the logic gates for loading the microcomputer with the logic gates' information responsively to receipt of the microcomputer's loading signals;

(f) a plurality of shift registers connected to selected outputs of the microcomputer, said shift registers operatively responsive to data outputs of the microcomputer for producing display activating signals and, alternatively bit words during receive each bit word comprising a synthesizer frequency address, a synthesizer enable signal and a power output selection signal, and a bit word during transmission including a carrier frequency address for a selected channel frequency;

(g) a display connected to the selected shift registers for displaying selected functional information;

(h) a microphone for producing audio frequencies;

(i) a frequency synthesizer selectively connected to the plurality of shift registers and microphone for producing frequencies responsively to the frequency synthesizer enable signals and frequency addresses of the bit words during receive, and a modulated signal by modulating the RF frequency of the frequency address and the audio frequency of the microphone during transmit; and

(j) a transceiver including a receiver/transmitter inhibiting means, a receiver and a transmitter, said inhibiting means connected to the microcomputer and said receiver and transmitter connected to the frequency synthesizer, said receiver/transmitter inhibiter means responsively to the microcomputers' transmitter inhibiting signals to inhibit the transmitter during receive, said receiver operative to receive the RF frequencies for the selected channels from the frequency synthesizer during receive and to produce any audio frequency present, and said transmitter operative to transmit the modulated frequencies of the frequency synthesizer during transmit.

4,267,598

NOISE-MEMORY REGULATED SQUELCH COMPENSATOR

Arthur J. Palmer, 2036 Coronet Dr., Largo, Fla. 33540

Filed Feb. 22, 1979, Ser. No. 14,125
Int. Cl.[3] H04B *1/44, 1/10*
U.S. Cl. 455—78 **1 Claim**

1. In a transceiver having

a 13.8 volt positive supply point,

a capability of being switched from one channel to any of a multiplicity of channels,

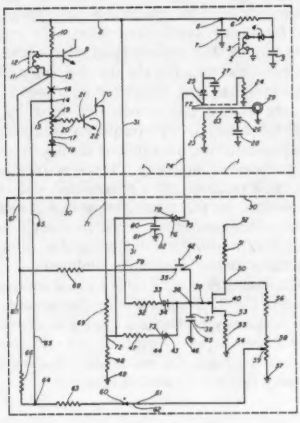
a source of transmitter r.f. output energy at a directional coupler,

a receiver section which includes an audio detector diode to supply audio signal to the audio amplifier stages of said transceiver, said audio detector diode also providing a signal-proportional negative voltage contribution through a resistor to a positive voltage line which is the AGC voltage line of said transceiver, and thence through a second resistor to an AGC voltage component source, said AGC voltage component source providing AGC voltage component and AGC voltage component change through a connection to the high side of a squelch control, the low side of said squelch control being returned through a diode to circuit common, and the wiper of said squelch control being connected through a resistor to the input of a squelch amplifier transistor arrangement allow-

ing the conduction point of said squelch amplifier transistor and the squelching of said audio signal to be determined by the level of said AGC voltage component and by the setting of said squelch control of said receiver section of said transceiver,

the improvement thereof being: a noise-memory regulated squelch compensating circuit for squelch circuits controlled by AGC voltage, said compensating circuit utilizing the introduction of an approximately equal and opposite offset voltage change, determined by a periodically updated noise memory circuit, to cancel said AGC voltage component change at said squelch control that is due to the gradual, diurnal rise and decay of noise level at the input of said receiver section of said transceiver, thereby eliminating the need for readjustment of said squelch control, once said control is satisfactorily set, said compensating circuit comprising:

a. means for detecting and storage of the peak values of AGC voltage excursions representative of said noise level, which includes a noise level detector diode, the anode of said detector diode being connected through an isolating resistor to said positive voltage line which is the AGC voltage line of said transceiver; and which means also include a memory capacitor being connected between the cathode of said detector diode and



circuit common, this arrangement resulting in the charging of said memory capacitor to a voltage level representative of the average peak level of said excursions through said noise level detector diode and said isolating resistor, said voltage level being updated by recharge when necessary or being retained for a time in storage by said memory capacitor due to its relatively long time constant dischage rates;

b. means for quick correction of the voltage level in storage when switching from said one channel to any of a higher or lower noise level, which includes a normally open "noise reset" switch which can series connect the high side of said memory capacitor through a resistor to a reset voltage source, which in said transceiver is said AGC voltage component source for said squelch control of said receiver section, thereby providing a relatively short time constant charge or discharge path for said quick correction of said voltage level in storage;

c. means for producing an amplified and inverted replica of the gradual changes of said voltage level in storage, which includes a junction field effect transistor with its gate connected to said high side of said memory capacitor and its drain being connected through a resistor to said 13.8 volt positive supply point of said transceiver, and the source of said field effect transistor being returned through a resistor to circuit common, these connections resulting in a linearly amplified and inverted change in voltage at said drain as said voltage level in storage across said memory capacitor is altered;

d. means for attenuating said amplified and inverted replica of said gradual changes of said voltage level in storage to the compensation level required to offset or cancel the noise level produced AGC voltage component change at said squelch control, which includes a series connected resistor and "compensation gain" potentiometer respectively connected between said drain of said junction field effect transistor and circuit common, said potentiometer being factory or servicer adjustable for said compensation level required at the wiper of said potentiometer;

e. means for coupling the voltage of said compensation level required to offset or cancel said noise level produced AGC voltage component change at said squelch control, which includes a connection from said wiper of said "compensation gain" potentiometer through the normally closed contacts of a "squelch disable" switch and first series resistor to a junction point connected to said high side of said squelch control, with a second series resistor being connected between said junction point and said AGC voltage component source for said squelch control, this arrangement producing a summing junction at said junction point where the voltage is held essentially constant by said voltage of said compensation level during no-signal intervals throughout the diurnal range of rise and decay of said noise level at said input of said receiver section of said transceiver;

f. means to inhibit the gradual loss of said voltage in storage when said audio signal of said receiver section of said transceiver is not squelched, which includes a divider formed by two series connected resistors added between the collector of said squelch amplified transistor of said receiver section and circuit common, the junction of said resistors being then connected through a third resistor to the cathode of an inhibit diode, the anode of which connects to said high side of said memory capacitor, the primary discharge path of said memory capacitor being through said inhibit diode and said third resistor to said junction of said series connected resistors, and through the lower of said series connected resistors to circuit common, this arrangement resulting in a positive voltage at said junction when said squelch amplifier transistor is in its cutoff state, said positive voltage being applied through said third resistor to said cathode of said inhibit diode, removing forward bias or applying reverse bias to said inhibit diode, blocking said primary discharge path for said memory capacitor and preventing said loss of said voltage in storage whenever said squelch amplifier transistor is cut off and said audio signal of said receiver section is not squelched;

g. means to inhibit the gradual loss of said voltage in storage when said transceiver is in "transmit" mode, which includes a diode detector, the anode of which connects to said source of transmitter r.f. output energy at said directional coupler of said transceiver, the cathode of said diode detector being connected to said junction of said series connected resistors of said divider added between said collector of said squelch amplifier transistor and circuit common, and said cathode of said diode detector also being connected through a capacitor to said circuit common, the positive voltage appearing across said capacitor at transmit time due to the detection of said transmitter r.f. output energy by said diode detector being applied through said junction of said series connected resistors and said third resistor to said cathode of said inhibit diode, reverse biasing said inhibit diode, thereby blocking said primary discharge path for said memory capacitor for the duration of said "transmit" mode preventing said gradual loss of said voltage in storage;

h. means to produce an unsquelched condition without

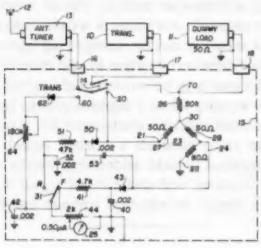
disturbing said setting of said squelch control of said transceiver, which includes a normally closed "squelch disable" switch connected between said wiper of said "compensation gain" potentiometer and said resistor connecting said compensation voltage to said summing junction and said high side of said squelch control, said "squelch disable" switch making possible the interruption of said compensation voltage to said summing junction, causing the voltage at said junction to swing less positive, in turn causing the cutoff of said squelch amplifier transistor and the production of an unsquelched condition without disturbing said setting of said squelch control of said receiver section of said transceiver.

4,267,599

ANTENNA TUNING SYSTEM

William Vissers, Cocoa Beach, Fla., assignor to Gregory R. Ginn, Hermosa Beach, Calif.

Filed Nov. 28, 1979, Ser. No. 98,248
Int. Cl.³ H04B *17/00*
U.S. Cl. 455—115 **8 Claims**



1. An antenna impedance matching system operable to eliminate standing waves caused by impedance mismatch comprising in combination,

a transmitter,

an antenna,

a dummy load of known impedance,

antenna tuning means adjustable to determine the antenna impedance coupled to the antenna,

switching means connecting the transmitter, dummy load and antenna tuning means to the matching system,

said switching means connecting the antenna tuning means, transmitter and dummy load respectively in transmitting and tuning positions by connecting the transmitter to the antenna tuning means in the transmitting position and to the dummy load in the tuning position to deliver transmitter power thereto,

a bridge circuit having at least one impedance arm of the same impedance as the dummy load connected to the transmitter in said tuning position,

circuit means connecting the antenna and tuning means in said tuning position as a variable impedance branch of the bridge circuit compared with the impedance of said impedance arm,

means coupling power to said bridge circuit derived from the transmitter power delivered to the dummy load in said tuning position, and

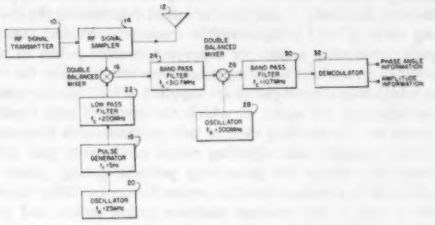
current monitoring means connected in the bridge circuit to indicate a null current when the antenna impedance matches the impedance of said impedance arm.

4,267,600

MODULATION MONITORING APPARATUS

Kenneth J. Campbell, Solana Beach, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 6, 1979, Ser. No. 101,029
Int. Cl.³ H04B *1/02*
U.S. Cl. 455—115 **6 Claims**



1. Monitoring apparatus for generating an output signal useful for evaluating the modulation quality and adequacy of an RF signal from a transmitter having a plurality of equally spaced channels, without regard to the selection of a channel, comprising:

first combining means for combining said RF signal with a first reference signal having a PRF equal to the transmitter channel spacing to produce a first signal of a predetermined frequency,

second combining means coupled to said first combining means for combining said first signal with a second reference signal to produce a second signal of a predetermined frequency, and

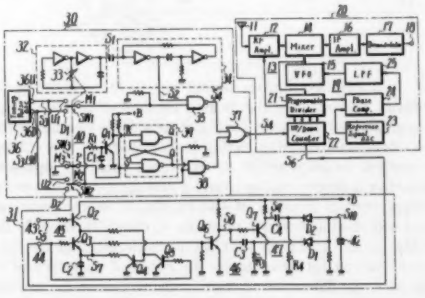
demodulating means coupled to said second combining means to produce said output signal having components proportional to the modulation of the transmitted RF signal.

4,267,601

TUNING CONTROL APPARATUS FOR A FREQUENCY SYNTHESIZER TUNER

Kaoru Umeda, Kawasaki, and Hideo Harada, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 14, 1979, Ser. No. 66,382
Claims priority, application Japan, Aug. 16, 1978, 53-99848; Aug. 16, 1978, 53-99849
Int. Cl.³ H04B *1/26;* H03J *7/28*
U.S. Cl. 455—165 **23 Claims**



1. Tuning control apparatus for use with a frequency synthesizer tuner of the type having a phaselocked loop including a reference oscillator, a variable frequency oscillator to produce a local oscillating signal, a programmable frequency divider coupled to the variable frequency oscillator for dividing the

frequency of said local oscillating signal by a variable dividing ratio to produce a frequency-divided oscillating signal, a phase comparator for comparing the frequency-divided oscillating signal to the output of the reference oscillator to produce an error signal, and means for feeding back the error signal from the phase comparator to the variable frequency oscillator to adjust the frequency of the local oscillating signal and thereby establish a tuning condition of the tuner, said apparatus comprising counter means for counting control pulses supplied thereto, the count of said counter means determining the dividing ratio of said programmable frequency divider; control pulse generating means for supplying control pulses to said counter means; and adjusting means operable to adjust the rate at which said control pulses are supplied to said counter means for adjusting the speed at which the count of said counter means and the dividing ratio of said programmable frequency divider changes said adjusting means comprising gate pulse generating means for generating periodic gating pulses of substantially constant duration, means for controllably varying the period of said constant duration gating pulses; and gate means conditioned by said periodic gating pulses for gating a predetermined number of said control pulses to said counter means, the number of gated control pulses being determined by the duration of said gating pulses, and the rate at which said control pulses are gated being determined by the period of said gating pulses.

4,267,602

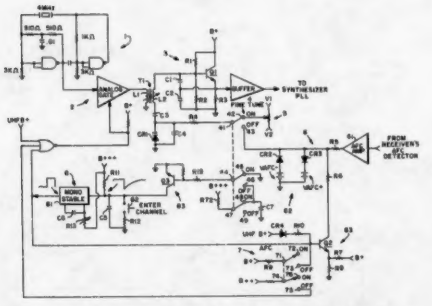
ACQUISITION DELAY CIRCUIT FOR A PLL REFERENCE OSCILLATOR

Craig W. Brun, Honeoye Falls, and Wilfred L. Hand, Clarence, both of N.Y., assignors to GTE Products Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 956,954, Nov. 2, 1978, abandoned. This application Oct. 4, 1979, Ser. No. 81,751

Int. Cl.³ H03B *3/06*

U.S. Cl. 455—182 **18 Claims**



1. In a PLL synthesizer tuning system for generating frequencies according to the desired channel of operation, said system having a reference oscillator selectively operable either in a crystal-controlled, injection-locked mode or in a voltage-controlled, mode, wherein the reference oscillator operating frequency is determined by a tuning voltage applied to a tuning voltage control terminal of said oscillator, alternatively supplied said toning voltage either by a manually-variable fine tuning circuit or by an AFC control circuit, and having a control circuit for determining the mode of operation of the reference oscillator, an acquisition delay circuit for assuring PLL acquisition in the voltage-conrolled mode, said delay circuit comprising:

a monostable having a trigger input responsive to edges of trigger pulses of a particular polarity and an output coupled to the control circuit, and

a trigger network coupled to the trigger input, said network including means for triggering the monstable in response to a change in the synthesizer's channel of operation.

4,267,603

MEMORY CONTROL CIRCUIT

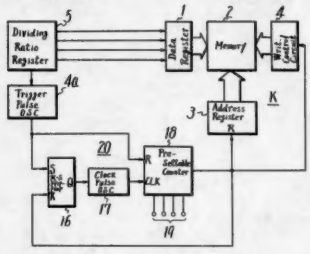
Yoshio Osakabe, and Hiroshi Yasuda, both of Yokohama, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 21, 1979, Ser. No. 68,421

Claims priority, application Japan, Aug. 22, 1978, 53-102049

Int. Cl.³ H04B *1/26;* **G11C** *7/00*

U.S. Cl. 455—186 **13 Claims**



10. A memory control circuit for controlling a write-in operation of an addressable memory circuit whereby a digital signal that is changeable over time is written into an addressed location in said memory circuit, comprising addressing means for selecting the addressed location in said memory circuit into which a digital signal is to be written; and control signal generating means for sensing when a digital signal to be written into said memory circuit remains unchanged for a predetermined time interval so as to generate a control signal, said control signal being supplied to said addressing means for selecting said addressed location, and said control signal being supplied to said memory circuit to initiate a write-in operation.

4,267,604

UHF ELECTRONIC TUNER

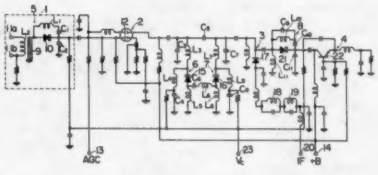
Akira Sato, Hiratsuka, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 19, 1979, Ser. No. 5,020

Claims priority, application Japan, Feb. 1, 1978, 53-10175

Int. Cl.³ H04B *1/18*

U.S. Cl. 455—193 **2 Claims**



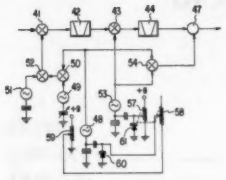
2. An ultra high frequency electronic tuner for tuning and heterodyning a desired radio frequency signal from among a possible plurality of radio frequency signals received from an antenna, said tuner comprising: a circuit board, a conductive tuner case surrounding said circuit board, a slender metallic bar mounted on said circuit board and electromagnetically coupled to said antenna, said metallic bar forming a resonant cavity between itself and a wall of said tuner case, said resonant cavity being a resonant cavity radio frequency input circuit, and at least one other resonant circuit disposed on said circuit board for tuning an output of said resonant cavity and being of a type other than a resonant cavity circuit.

4,267,605

INTERFERENCE ELIMINATOR IN COMMUNICATION RECEIVER

Mitsuo Matsuzawa, and Hajime Yashita, both of Tokyo, Japan, assignors to Trio Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1979, Ser. No. 15,058
Int. Cl.³ H04B *1/26, 1/10*
U.S. Cl. 455—266 **9 Claims**



1. An interference eliminator for use in a communication receiver for eliminating interference from a high frequency input signal applied to the receiver, the high frequency input signal extending over a first range of frequencies, said interference eliminator comprising

a first mixing circuit responsive to the high frequency input signal for providing a first intermediate frequency signal,

a first band-pass filter responsive to the first intermediate frequency signal,

a second mixing circuit responsive to the output of said first band-pass filter for providing a second intermediate frequency signal,

a second band-pass filter having a center frequency different from the center frequency of said first band-pass filter and responsive to the second intermediate frequency signal,

a first local oscillator connected to said first mixing circuit for applying a first local oscillator signal thereto,

a second local oscillator connected to said second mixing circuit for applying a second local oscillator signal thereto, the relationships between the frequency of said first local oscillator signal to the center frequency and band-pass of the first band-pass filter and the frequency of said second local oscillator signal to the center frequency and band-pass of the second band-pass filter normally being such that the range of frequencies of said high frequency input signal effectively passed by said first and second band-pass filters after conversion by said first and second mixing circuits is such that (a) at least all of said first range of frequencies of the high frequency input signal are effectively passed by the first and second band-pass filters and (b) the center frequency of the range of frequencies effectively passed by the filters is substantially equal to the center frequency of the first range of frequencies,

first control means for simultaneously changing said first and second local oscillator frequencies only when said second local oscillator is controlled to change said second local oscillator frequency so that the ratio of the amount of frequency change in said first local oscillator frequency to that in said second local oscillator frequency is 1:2 thereby (a) a reduced range of frequencies of the high frequency input signal is effectively passed by the filters which is less than said first range of frequencies and (b) the center frequency of the reduced range of frequencies effectively passed by the filters is substantially equal to the center frequency of the first range of frequencies,

second control means for changing said first local oscillator frequency without changing the frequency of said second local oscillator so that the center frequency of the reduced range of frequencies effectively passed by the filters is shifted with respect to the center frequency of the first range of frequencies, and

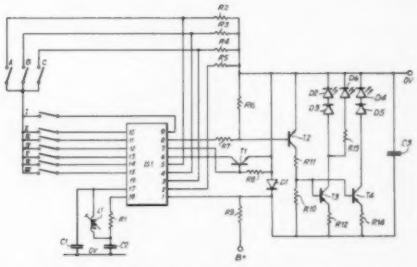
a third mixing circuit responsive to the output of said second band-pass filter, a notch filter having a fixed notch frequency responsive to the output of said third mixing circuit and a third local oscillator connected to said third mixing circuit and means for changing the output frequency of said third local oscillator to thereby vary the frequency of the output signal of said third mixing circuit so that an undesired signal can be eliminated by the notch of said notch filter whereby the notch frequency of said notch filter is effectively varied.

4,267,606

WIRELESS, MULTI-CHANNEL REMOTE CONTROL UNIT FOR TOYS

Heino Stelter, 2 Hasenstrasse, 851 Fuerth; Manfred Preiss, Nuernberger Str. 59, 8501 Rosstal, and Udo Polka, Gemuenderstr. 10, 7118 Ingelfingen, all of Fed. Rep. of Germany

Filed May 24, 1979, Ser. No. 42,100
Int. Cl.³ H04B *9/00*
U.S. Cl. 455—603 **6 Claims**



1. A wireless, multi-channel remote control unit for toys, said remote control unit comprising

an infrared transmitter including a coding device for correlating a coded series pulse train to each of a plurality of channels; and

at least one infrared receiver including a decoding device for decoding the coded series pulse trains received from the transmitter, said decoding device including a plurality of outputs one of which is correlated with at least one of the channels of the transmitter, the channels of said transmitter being divided into groups, each group having the same number of channels, and switch means interacting in a matrix manner for selecting said channels, said switch means comprising a first group of switches for selecting a group of said groups of channels and a second group of switches for selecting a channel from a selected group of channels.

DESIGN PATENTS

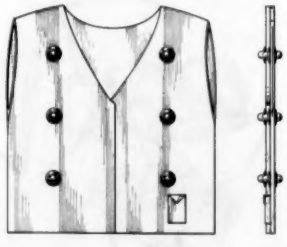
GRANTED MAY 12, 1981

ERRATA

For CLASS	See PATENT NO.
D99-049	259,174
D09-370	259,213

259,145
PANTS
Ryoichi Inoue, Ashiya, Japan, assignor to Descente Ltd., Osaka, Japan
Filed Apr. 21, 1978, Ser. No. 899,019
Claims priority, application Japan, Feb. 1, 1978, 53-3144
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—28

259,146
COMBINED VEST AND BLINKER LIGHTS
Jay B. Carr, Jr., 945 S. Osage Ave., Inglewood, Calif. 90301
Filed Nov. 25, 1977, Ser. No. 854,987
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—184

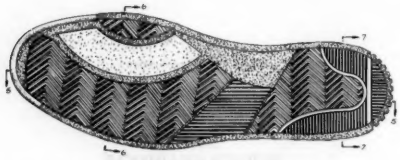


259,147
NURSE'S HEADWEAR
Catherine C. Evans, Milwaukee, Wis., assignor to Will Ross, Inc., Milwaukee, Wis.
Filed Apr. 19, 1979, Ser. No. 31,698
Term of patent 14 years
Int. Cl. D02—*03*
U.S. Cl. D2—237

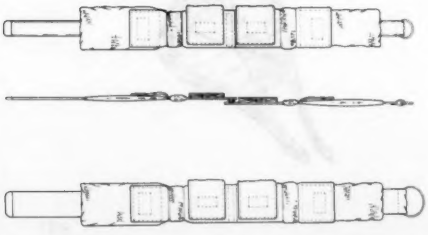
259,148
NURSE'S HEADWEAR
Catherine C. Evans, Milwaukee, Wis., assignor to Will Ross, Inc., Milwaukee, Wis.
Filed Apr. 19, 1979, Ser. No. 31,696
Term of patent 14 years
Int. Cl. D02—*03*
U.S. Cl. D2—240

259,149
SOCCER SHOE BODY
Jonathan Werman, Hampton Beach, N.H., assignor to W. H. Brine Company, Milford, Mass.
Filed Apr. 9, 1979, Ser. No. 28,565
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—309

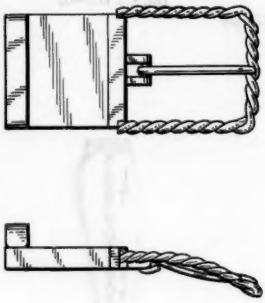
259,150
SOLE FOR A SHOE
Frank C. Cesare, Woodbury; James H. Flood, Watertown, and Anthony J. Urcinas, Waterbury, all of Conn., assignors to The Keds Corporation, Cambridge, Mass.
Filed Mar. 16, 1979, Ser. No. 21,285
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320



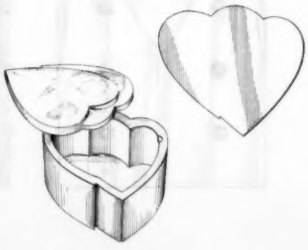
259,151
JOGGER'S BELT
John E. Kishbaugh, and Gordon Storholm, both of P.O. Box 671, Haddonfield, N.J. 08033
Filed Oct. 20, 1978, Ser. No. 953,086
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—383



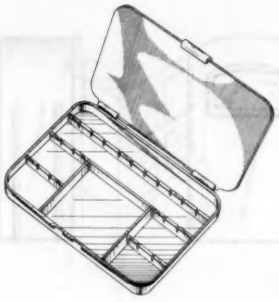
259,152
EXPANSIBLE BELT BUCKLE
Barry Heuser, Torrington, Conn., assignor to Manhattan Industries, Inc., New York, N.Y.
Filed May 30, 1978, Ser. No. 910,598
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—427



259,153
JEWELRY BOX
Domenic R. Valente, 116 Harding Ter., Dedham, Mass. 02026
Filed May 8, 1978, Ser. No. 903,967
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—66



259,154
JEWELRY CASE
Lee C. White, Jr., and Warren E. Persky, both of Dallas, Tex., assignors to Item House, Inc., Dallas, Tex.
Filed Mar. 5, 1979, Ser. No. 17,495
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—75



259,155
ARMCHAIR
Randall P. Buhk, Wyoming, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.
Filed May 22, 1978, Ser. No. 908,145
The portion of the term of this patent subsequent to Oct. 23, 1993, has been disclaimed.
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—31

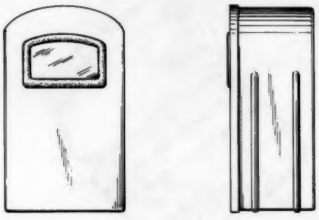
259,156
ROCKABLE FOOTSTOOL
Frank A. Massow, Volcano, Hi., assignor to Marjorie M. Corley and Christina C. Corley, both of Volcano, Hi.
Filed Jun. 28, 1979, Ser. No. 53,179
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—36

259,157
COUCH
Karl Lübke, Rheda, Fed. Rep. of Germany, assignor to Lübke KG, Rheda, Fed. Rep. of Germany
Filed Sep. 9, 1977, Ser. No. 831,799
Claims priority, application Fed. Rep. of Germany, May 13, 1977, 982
The portion of the term of this patent subsequent to Dec. 18, 1993, has been disclaimed.
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—61

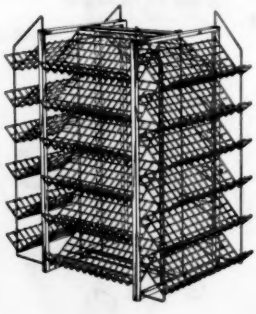
259,158
SECTION CONSOLE FOR USE WITH COSMETIC DISPLAYS
Evelyna C. Dyson, New York, N.Y., assignor to Revlon, Inc., New York, N.Y.
Filed Nov. 13, 1978, Ser. No. 960,291
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—85

259,159
LETTER HOLDER
John Graybill, Lot #9, Rte. 2 Columbia, Dover, Ohio 44622
Filed Oct. 19, 1978, Ser. No. 952,623
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—114

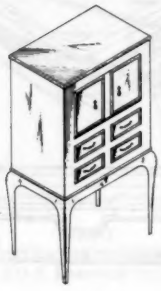
259,160
STORAGE CABINET FOR SAFETY EQUIPMENT OR THE LIKE
William D. Crosbie, Sr., 5966 Satinwood Dr., Baton Rouge, La. 70812
Filed Dec. 22, 1978, Ser. No. 973,232
Term of patent 14 years
Int. Cl. D6—*04*; D29—*01*
U.S. Cl. D6—127



259,161
PLACEMAT DISPLAY RACK
William R. Thauer, Centerville, Mass., assignor to General Housewares Corp., Hyannis, Mass.
Filed Sep. 10, 1979, Ser. No. 73,949
Term of patent 14 years
Int. Cl. D20—*02*; D6—*04*
U.S. Cl. D6—157

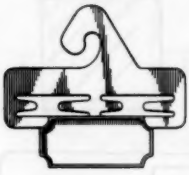


259,162
JEWELRY CABINET
Vittoria A. D'Alessandro, 4710 University Way NE., Seattle, Wash. 98105
Filed Jun. 14, 1978, Ser. No. 916,003
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—164



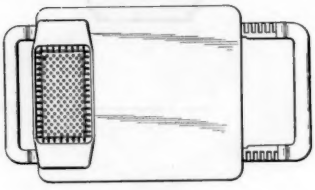
259,163
PICTURE FRAME
Anon G. Leard, and Dorothy M. Leard, both of 4322 Charles St., Amarillo, Tex. 79106
Filed Nov. 14, 1978, Ser. No. 960,620
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—234

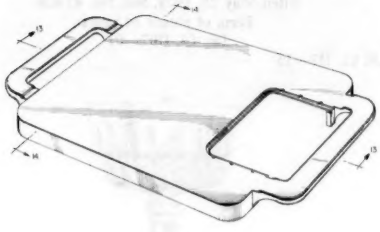
259,164
TIE HOLDER
Lorne Abramowitz, 628 Roslyn Ave., Westmount, Quebec, Canada
Division of Ser. No. 921,352, Jul. 3, 1978, Pat. No. Des. 254,644.
This application Aug. 7, 1979, Ser. No. 65,191
Term of patent 14 years
Int. Cl. D6—*08*
U.S. Cl. D6—251



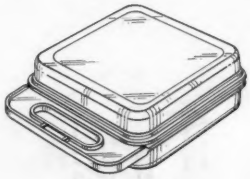
259,165
GOBLET OR SIMILAR ARTICLE
Jean-Jacques Durand, 62510 Arques, LaGarenne, France
Filed May 25, 1979, Ser. No. 42,428
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—13

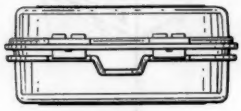
259,166
WORKING AND SERVING BOARD WITH A REMOVABLE STRAINER
Kurt Krusche, Frankfurt, Fed. Rep. of Germany, assignor to Allstar Verbrauchsguter GmbH & Co. KG, Frankfurt, Fed. Rep. of Germany
Filed Nov. 22, 1978, Ser. No. 962,998
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1978, 73MR8711
Term of patent 14 years
Int. Cl. D07—*04, 99*
U.S. Cl. D7—21



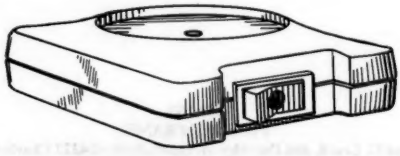


259,167
LUNCH BOX
Robert H. C. M. Daenen, Hekelgem, Belgium, assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Apr. 23, 1979, Ser. No. 32,065
Term of patent 14 years
Int. Cl. D07—*99*
U.S. Cl. D7—76





259,168
CUP WARMER
Ross J. Petrie, Fort Lauderdale, Fla., assignor to Jerry Wayne Simmons, Ash, N.C.
Filed May 15, 1978, Ser. No. 906,134
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—123



259,169
COVER FOR HAMPERS
Paul Bogner, 8952 Faust Cir., Huntington Beach, Calif. 92646
Filed Mar. 30, 1978, Ser. No. 891,937
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—194

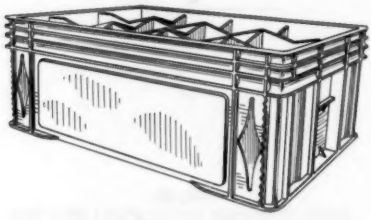
259,170
FIXING CLIP FOR ROOFING OR SIDING MATERIAL OR SIMILAR ARTICLE
Mervyn C. Emms, Valentine, Australia, assignor to John Lysaght (Australia) Limited, Sydney, Australia
Filed Dec. 21, 1978, Ser. No. 971,759
Claims priority, application Australia, Jun. 23, 1978, 75132
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—382

259,171
EXPANSION LOCK
Robert S. Wallace, 823 S. Longwood Ave., Los Angeles, Calif. 90005
Filed Aug. 31, 1978, Ser. No. 938,400
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—385

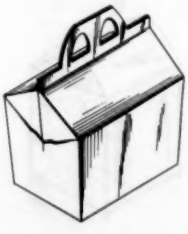
259,172
BOTTLE
Billy E. Ross, Elkhart, Ind., assignor to The Selmer Company, Elkart, Ind.
Filed May 26, 1978, Ser. No. 910,041
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—389

259,173
COLOGNE BOTTLE
Ralph Lauren, New York, N.Y., assignor to Warner/Lauren Ltd., New York, N.Y.
Filed Jul. 10, 1978, Ser. No. 923,413
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—401

259,174
BEVERAGE CASE
Theodor M. Box, 1108 Aileen Rd., Brielle, N.J. 08730
Filed Nov. 14, 1978, Ser. No. 960,582
Term of patent 14 years
Int. Cl. D9—*04*
U.S. Cl. D99—49



259,175
LUNCH BOX CARTON
John J. Austin, Jr., Hinsdale, Ill., assignor to Champion International Corporation, Stamford, Conn.
Filed Feb. 1, 1979, Ser. No. 8,684
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—431



259,176

PACKAGE FOR AMPOULES

Otto Hofer, Schaan, Liechtenstein, assignor to Interondo AG, St. Gall, Switzerland

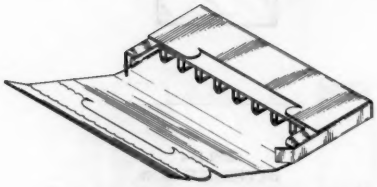
Filed Jun. 16, 1978, Ser. No. 917,013

Claims priority, application Netherlands, Apr. 13, 1978, 7866760

Term of patent 14 years

Int. Cl. D9—*03*

U.S. Cl. D9—346



259,177

CONTAINER FOR BULK MATERIALS

Frank Nattrass, Knaresborough, England, assignor to Lolift Limited, Yorkshire, England

Filed Sep. 8, 1977, Ser. No. 831,694

Claims priority, application United Kingdom, Jul. 4, 1977, 980768/77

Term of patent 14 years

Int. Cl. D9—*04*

U.S. Cl. D9—432

259,178

CONTAINER FOR BULK MATERIALS

Frank Nattrass, Knaresborough, England, assignor to Lolift Limited, Yorkshire, England

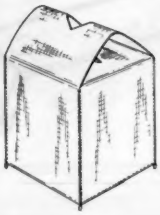
Filed Sep. 8, 1977, Ser. No. 831,696

Claims priority, application United Kingdom, Jul. 14, 1977, 980767/77

Term of patent 14 years

Int. Cl. D9—*04*

U.S. Cl. D9—246



259,179

KNURLED CLOSURE

Bing Welch, Richmond, Ind., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Sep. 25, 1978, Ser. No. 945,580

Term of patent 14 years

Int. Cl. D09—*07*

U.S. Cl. D9—453

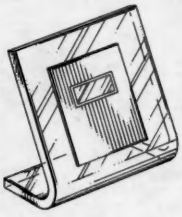
259,180
DISPENSING FIGURINE FOR A BOX OF TISSUE
Judith R. Zeiger, 167 Pond Brook Rd., Chestnut Hill, Mass. 02167
Filed Dec. 5, 1977, Ser. No. 857,362
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—451

259,181
BOTTLE
Henry Saenz, Pittsburgh, Pa., assignor to J. L. Prescott Co., Passaic, N.J.
Filed Dec. 26, 1978, Ser. No. 973,127
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—389

259,182
SHAVING LATHER APPLICATOR
Orie M. Polkingharn, 3101 Snyder Ave., Cheyenne, Wyo. 82001
Filed Feb. 14, 1979, Ser. No. 11,806
Term of patent 14 years
Int. Cl. D09—*07*
U.S. Cl. D9—435

259,183
CAP FOR DISPENSING DISINFECTANTS
Clayton N. Hirtle, 44332 Balch Park Dr., Springville, Calif. 93265
Filed Apr. 3, 1980, Ser. No. 136,809
Term of patent 14 years
Int. Cl. D09—*07*
U.S. Cl. D9—450

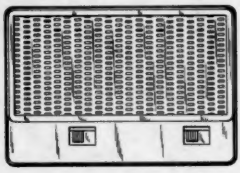
259,184
DIGITAL CLOCK
Gladys M. Francis, and David H. Francis, both of Scottsdale, Ariz., assignors to Microtime, Incorporated, Scottsdale, Ariz.
Filed Mar. 22, 1979, Ser. No. 22,928
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—15



259,185
ALARM CLOCK
Robert Hocq, Boulogne-Billiancourt, France, assignor to Cartier International B.V., Amsterdam, Netherlands
Filed Jul. 5, 1978, Ser. No. 922,159
Claims priority, application France, Jan. 4, 1978, 78 40916
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—26

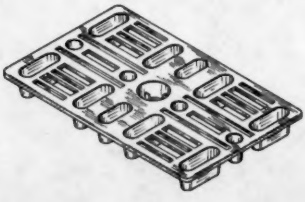
259,186
WRIST WATCH
Alain D. Perrin, Rueil-Malmaison, France, assignor to Interdica S.A., Switzerland
Filed Dec. 11, 1978, Ser. No. 968,169
Claims priority, application France, Jun. 12, 1978, 78 76645; Sep. 27, 1978, 78 76885
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—32

259,187
INTRUSION ALARM
Francesco Collura, New York, N.Y., assignor to CEGA, Inc., Cambridge, Mass.
Filed Sep. 1, 1978, Ser. No. 939,072
Term of patent 7 years
Int. Cl. D10—*05*
U.S. Cl. D10—106



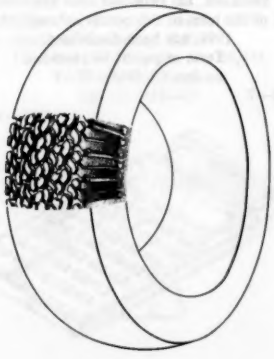
259,188
FINGER RING
Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480
Division of Ser. No. 841,747, Oct. 13, 1977, Pat. No. Des. 252,744. This application Mar. 15, 1979, Ser. No. 21,421
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—27

259,189
PALLET
William H. Wilson, Fort Smith, Ark., and Joy D. Cole, Muskogee, Okla., assignors to Cole Grain Company, Muskogee, Okla.
Filed Dec. 6, 1978, Ser. No. 966,961
Term of patent 14 years
Int. Cl. D9—*08*
U.S. Cl. D12—53



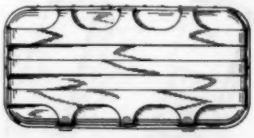
259,190
CAMPER VEHICLE
David E. Rowe, 2890 W. 62nd Ave., Denver, Colo. 80221
Filed Dec. 18, 1978, Ser. No. 970,566
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—100

259,191
PNEUMATIC TIRE TREAD AND BUTTRESS
Gerassimos C. Candiliotis, Grosse Pointe Farms, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed Apr. 3, 1979, Ser. No. 26,635
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—146

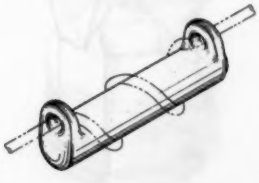


259,192
LUGGAGE SADDLE BAG
Thomas S. Beaubien, Rancho Palos Verdes; Dennis C. Rich, Long Beach, and Robert E. Oehring, Norwalk, all of Calif., assignors to Bates Industries, Inc., Long Beach, Calif.
Filed Sep. 17, 1979, Ser. No. 76,420
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—158

259,193
VEHICLE LUGGAGE CARRIER
Virgil E. Sellers, 3219 Midway Dr., Cedar Falls, Iowa 50613; Donald E. Lowman, 3652 Burton Ave., and Ronald L. Hovick, 275 Martin Rd., both of Waterloo, Iowa 50701
Filed Nov. 14, 1978, Ser. No. 960,695
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—157

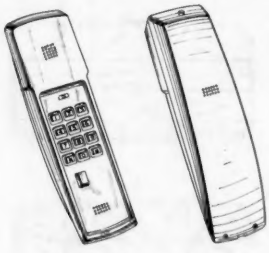


259,194
RESILIENT SHOCK ABSORBER FOR BOAT DOCKING LINES OR THE LIKE
Walter L. Koughan, 18011 NE. 196th St., Woodinville, Wash. 98072
Filed Dec. 8, 1978, Ser. No. 967,680
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D12—159

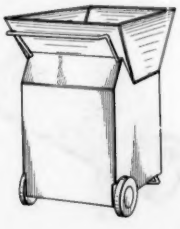


259,195
WHEEL
Bruce N. Smith, Seabrook, N.H., assignor to Spherex, Incorporated, Seabrook, N.H.
Filed Feb. 21, 1979, Ser. No. 13,085
The portion of the term of this patent subsequent to Sep. 26, 1992, has been disclaimed.
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—205

259,196
HAND-HELD TELEPHONE
John Pardo, Yonkers, N.Y., assignor to Leisurecraft Products Ltd., Plainview, N.Y.
Filed Aug. 10, 1979, Ser. No. 65,599
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—64

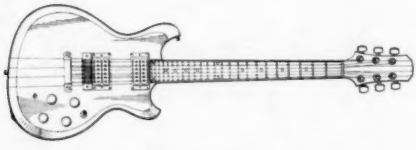


259,197
HOUSING FOR INSULATION BLOWING MACHINE
Robert R. Gibbons, Westminster, Colo., assignor to Insulation Technology Corporation, Northglenn, Colo.
Filed Feb. 27, 1978, Ser. No. 881,832
Term of patent 14 years
Int. Cl. D15—*09*; D12—*02*
U.S. Cl. D15—122

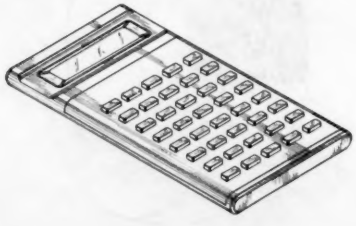


259,198
DIGITAL EXPOSURE METER
Darwin E. Chapman, Palo Alto, Calif., assignor to Creative Phototronics, Inc., Mountain View, Calif.
Filed Mar. 31, 1978, Ser. No. 892,463
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—39

259,199
ELECTRIC GUITAR
Lawrence J. Kelly, Cincinnati, Ohio, and Thomas E. Kimble, Covington, Ky., assignors to Baldwin Piano & Organ Company, Cincinnati, Ohio
Filed Sep. 10, 1979, Ser. No. 73,890
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—14



259,200
CASE FOR AN ELECTRONIC CALCULATOR
Robert A. Welch, and Shinpei Ichikawa, both of Lubbock, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Jul. 12, 1978, Ser. No. 924,038
The portion of the term of this patent subsequent to Aug. 12, 1994, has been disclaimed.
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7



259,201

ELECTRONIC CALCULATING MACHINE

Masaji Sawada, and Harumi Tatsugami, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan

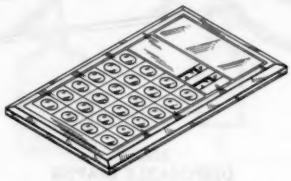
Filed May 4, 1979, Ser. No. 36,177

Claims priority, application Japan, Nov. 14, 1978, 53-48462

Term of patent 14 years

Int. Cl. D18—*01*

U.S. Cl. D18—7



259,202

COMBINED TOY SCOOTER AND FIGURE THEREFOR

Naoharu Yamashina, Tokyo, Japan, assignor to Kabushiki Kaisha Bandai Overseas, Tokyo, Japan

Filed Feb. 5, 1979, Ser. No. 9,057

Claims priority, application Japan, Aug. 10, 1978, 53-33919

Term of patent 14 years

Int. Cl. D21—*01*

U.S. Cl. D21—134

259,203

DOLL FIGURE

Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91345, and Elonne Dantzer, Redondo Beach, Calif., assignors to Adolph E. Goldfarb, Northridge, Calif.

Filed Feb. 9, 1979, Ser. No. 10,922

Term of patent 14 years

Int. Cl. D21—*01*

U.S. Cl. D21—184

259,204

TELESCOPIC SIGHT MOUNT FOR 22 CALIBER RIFLE

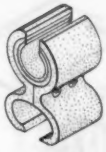
Gerald T. Weast, 20821 Grand River, Detroit, Mich. 48226

Filed Aug. 24, 1978, Ser. No. 936,341

Term of patent 14 years

Int. Cl. D22—*05*

U.S. Cl. D22—7



259,205

FISHING SPINNING REEL

Tetsuyuki Doi, and Takeshi Shohoji, both of Fukuyama, Japan, assignors to Ryobi Limited, Japan

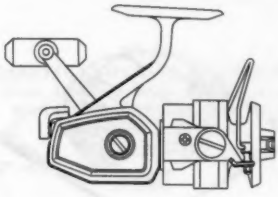
Filed Jun. 23, 1978, Ser. No. 918,622

Claims priority, application Japan, Jan. 31, 1978, 53-3097

Term of patent 14 years

Int. Cl. D22—*25*

U.S. Cl. D22—25



259,206

EVAPORATIVE COOLER

Joseph R. Parren, 4601 W. Dailey, Glendale, Ariz. 85306

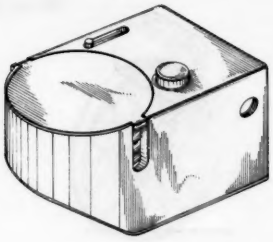
Filed Dec. 4, 1978, Ser. No. 966,464

Term of patent 14 years

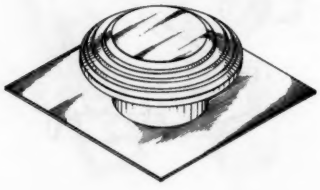
Int. Cl. D23—*04*

U.S. Cl. D23—139

259,207
FACIAL SAUNA HOUSING
Michael A. Cousins, Huntington, N.Y., assignor to The Gillette Company, Boston, Mass.
Filed Dec. 18, 1978, Ser. No. 970,744
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D23—148

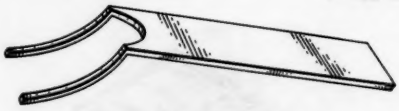


259,208
ROOF VENT
John R. McCullough, 23891 Madison St., Torrance, Calif. 90505
Filed Apr. 23, 1979, Ser. No. 32,716
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—153

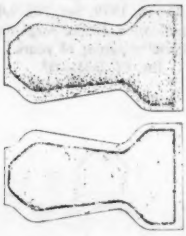


259,209
TONGUE CLEANER
Anil K. Gautama, 1707 Grandin Ave., Rockville, Md. 20851
Filed Oct. 11, 1978, Ser. No. 950,528
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—10

259,210
BLOOD VESSEL TRAP
Patrick C. Ayer, P.O. Box 6, Eau Claire, Wis. 54701
Filed Nov. 13, 1978, Ser. No. 959,653
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—23

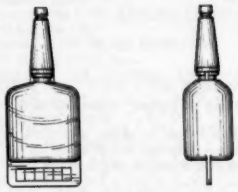


259,211
DISPOSABLE DIAPER
Christine I. E. Larkö, Hovas, Sweden, assignor to Molnlycke Aktiebolag, Gothenburg, Sweden
Filed Aug. 21, 1978, Ser. No. 935,380
Claims priority, application Sweden, Apr. 12, 1978, 7810230
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—50

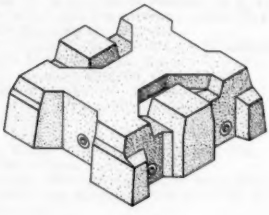


259,212
BASE FOR A TELEPHONE SET
Donald Foggia, Ocean, N.J., and Roman Pomponi, Norwalk, Conn., assignors to TIE/Communications, Inc., Shelton, Conn.
Filed Aug. 24, 1978, Ser. No. 936,336
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D24—53

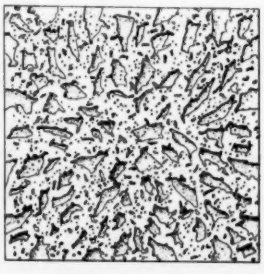
259,213
VIAL SUITABLE FOR PHARMACEUTICALS
Louis T. Pagels, Hanover Park, Ill., assignor to Automatic Liquid Packaging, Inc., Arlington Heights, Ill.
Filed Mar. 13, 1978, Ser. No. 886,088
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D9—370



259,214
SOIL EROSION PREVENTION BLOCK
Kossuth J. Landry, Jr., P.O. Box 599 Channelview, TX
Filed Nov. 29, 1978, Ser. No. 964,600
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—91



259,215
CEILING PANEL OR SIMILAR ARTICLE
Miner H. Hendrickson, Minneapolis, Minn., assignor to Conwed Corporation, St. Paul, Minn.
Filed Nov. 9, 1978, Ser. No. 959,198
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—97



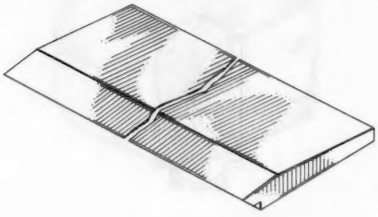
259,216
DECORATIVE NIGHT LIGHT DIFFUSER
Robert L. Martin, Cranston, and Joan K. Creamer, East Greenwich, both of R.I., assignors to General Electric Company, New York, N.Y.
Filed Dec. 26, 1978, Ser. No. 973,652
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—118

259,217
CIGARETTE AND CIGAR EXTINGUISHER
Douglas J. Smith, 159 Chisholm St., Oakville, Ontario, Canada
Filed Oct. 16, 1978, Ser. No. 951,671
Term of patent 14 years
Int. Cl. D27—*99*
U.S. Cl. D27—09

259,218
BRIDGING PLATFORM PANEL FOR ANIMAL CONFINEMENT PENS

Richard E. Bunger, 5202 E. Washington St., Phoenix, Ariz. 85034

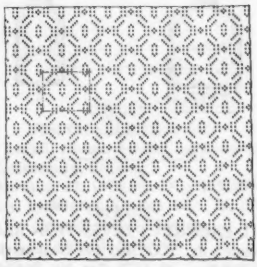
Filed Aug. 10, 1979, Ser. No. 65,714
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—02



259,219
PAPER TOWELING

Gregory A. Bates, Cincinnati; Ralph R. Emenaker, Hamilton, both of Ohio, and Louis M. Henderson, Morningview, Ky., assignors to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Oct. 10, 1978, Ser. No. 949,825
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D59—2 B



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF MAY, 1981

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A & B Industries, Inc.: *See*—
Atkins, John H., 4,266,297, Cl. 2-2.500.

A/S Blehr & Tenvig: *See*—
Carlsen, Ove, 4,266,496, Cl. 114-126.000.

AB Motala Verkstad: *See*—
Book, deceased; Nils E. E., 4,266,925, Cl. 425-387.100.

Aceto Chemical Co, Inc.: *See*—
Mann, Seymour, 4,267,396, Cl. 568-851.000.

ACF Industries, Incorporated: *See*—
Kacal, Gary W.; and Partridge, Charles C., 4,266,566, Cl. 137-316.000.
Ruth, Harvey L.; Schneider, Michael H.; and Phelan, Michael B., 4,267,129, Cl. 261-72.00R.

Achelpohl, Fritz; Feldkaper, Richard; and Blom, Friedrich, to Windmoller & Holscher. Method and apparatus for separating groups of workpieces being conveyed in superposed overlapping formation. 4,266,654, Cl. 198-425.000.

Ackeret, Peter, to Licinvest AG. Filing arrangement. 4,266,834, Cl. 312-8.000.

Ackley, E. Michael. Material orientation and printing apparatus and method. 4,266,478, Cl. 101-40.000.

Ackley, Michael. Material orientation apparatus and method. 4,266,477, Cl. 101-40.000.

Aerni-Leuch AG: *See*—
Baumann, Niklaus, 4,267,249, Cl. 430-187.000.

Agaisse, Michel, to Les Cables De Lyon. Method for end to end connection of mineral-insulated electric cable and assembly for same. 4,266,992, Cl. 156-49.000.

AGFA-Gevaert, A.G.: *See*—
Kunitz, Friedrich-Wilhelm; Wolff, Erich; and Frank, Karl, 4,267,263, Cl. 430-469.000.
Lohmann, Joachim W.; Lapp, Otto; and Ranz, Erwin, 4,267,264, Cl. 430-505.000.

Ago, Hitoshi, to Shin Meiwa Industry Co., Ltd. Long-sized wire transfer apparatus. 4,266,455, Cl. 83-84.000.

Aikens, Paul W., to Du Pont de Nemours, E. I., and Company. Zero insertion force toggle link connector. 4,266,839, Cl. 339-75.0MP.

Air-Flo Manufacturing Co., Inc.: *See*—
Musso, Charles S., Jr., 4,266,731, Cl. 239-676.000.

Air Pollution Technology, Inc.: *See*—
Calvert, Seymour, 4,266,951, Cl. 55-84.000.

Air Preheater Company, Inc., The: *See*—
Oare, Arthur A.; and Wonderling, Harold J., 4,266,954, Cl. 55-341.00R.

Airco, Inc.: *See*—
Braatz, Robert E., 4,266,573, Cl. 137-630.180.

Aizawa, Tatsuo: *See*—
Nishibayashi, Katsumi; Amagai, Yoshimi; Hikake, Norio; Kouchi, Toshihiro; and Aizawa, Tatsuo, 4,267,246, Cl. 430-98.000.

Akashi, Goro: *See*—
Sasazawa, Koji; Kitamoto, Tatsuji; Akashi, Goro; Masaki, Kouichi; and Dezawa, Shinichiro, 4,267,207, Cl. 427-129.000.

Akashi, Teruo: *See*—
Hayashi, Shinjiro; Taniyama, Kiyoshi; Kikuchi, Kenichi; and Akashi, Teruo, 4,266,439, Cl. 74-501.00R.

Akatsuka, Masaki: *See*—
Hasegawa, Junzo; Kawabata, Susumu; Niimi, Hiroshi; Suzuki, Yasuhiko; Akatsuka, Masaki; and Tsunekawa, Takahiko, 4,266,324, Cl. 19-239.000.

Akhavi, David S., to American Hospital Supply Corporation. Method of collecting and dispensing a blood sample. 4,266,558, Cl. 128-766.000.

Akhavi, David S., to American Hospital Supply Corporation. Blood sampler. 4,266,559, Cl. 128-766.000.

Akhavi, David S., to American Hospital Supply Corporation. Stripper clamp. 4,266,751, Cl. 251-6.000.

Aktiebolaget Bofors: *See*—
Nygaard, Kurt; Mattsson; Kjell; and Bratt, Sven-Erik, 4,267,567, Cl. 362-46.000.
Saltin, Malte, 4,266,463, Cl. 89-41.0AA.

Akzo N.V. of Arnhem/Nederland: *See*—
Henne, Werner; Dunweg, Gustav; Schmitz, Werner; Pohle, Raimund; and Lawitzki, Friedrich, 4,267,047, Cl. 210-490.000.

Albany International Corp.: *See*—
Schiher, Stanley C.; and Renjilian, Armen, 4,267,227, Cl. 428-234.000.

Albrecht, Paul R.: *See*—
Stradling, John H.; and Albrecht, Paul R., 4,266,643, Cl. 192-51.000.

Alco Foodservice Equipment Company: *See*—
Brown, Wade R.; and Mannhardt, Werner, 4,266,726, Cl. 239-406.000.

Alderman, James. Axe sharpening device. 4,266,448, Cl. 76-82.000.

Alex, Wayne E. Long line hook arranging apparatus. 4,266,359, Cl. 43-6.500.

Alice, Martin B.; and Grass, John W., to Bendix Corporation, The. Measurement indicators for a measuring machine. 4,266,345, Cl. 33-169.00R.

Allen Group, Inc., The: *See*—
Barber, Ivan J., 4,266,482, Cl. 104-172.00B.

Allen, Russell E.: *See*—
Trueblood, Troy M.; and Moulton, Robert H., 4,267,118, Cl. 260-428.000.

Allied Chemical Corporation: *See*—
Thomas, Rudy V.; and Stephenson, Robert L., 4,266,810, Cl. 280-802.000.

Allis-Chalmers Corporation: *See*—
Wheeler, Keith A.; and Hastings, Dawson W., 4,266,618, Cl. 172-314.000.

Allport, John J., to Zikonix Corporation. Method for continuously determining the composition and mass flow of butter and similar substances from a manufacturing process. 4,266,425, Cl. 73-61.00R.

Alsup, James M.: *See*—
Bond, James W.; Alsup, James M.; Speiser, Jeffrey M.; Whitehouse, Harper J.; and Lagnado, Isaac, 4,267,580, Cl. 364-824.000.

Alterman, Israel: *See*—
Rom, Josef; Alterman, Israel; and Shwartz, Josef, 4,266,609, Cl. 166-251.000.

Alterman, Isreal: *See*—
Rom, Josef; Alterman, Israel; and Shwartz, Josef, 4,266,609, Cl. 166-251.000.

Aluminum Company of America: *See*—
Hager, Donald G.; and Rubel, Frederick, Jr., 4,267,057, Cl. 210-678.000.

Alyabiev, Vitaly K.: *See*—
Gaun, Viktor A.; Belousov, Anatoly V.; Petukhov, Vadim D.; Suxov, Gennady I.; Belyaev, Nikolai A.; Alyabiev, Vitaly K.; and Rassomakhin, Klimenty E., 4,266,465, Cl. 91-234.000.

Amagai, Yoshimi: *See*—
Nishibayashi, Katsumi; Amagai, Yoshimi; Hikake, Norio; Kouchi, Toshihiro; and Aizawa, Tatsuo, 4,267,246, Cl. 430-98.000.

Amano, Toshio: *See*—
Sato, Masaru; and Amano, Toshio, 4,267,563, Cl. 358-127.000.

Ambac Industries, Incorporated: *See*—
Voss, James R.; and Vanderpoel, Richard E., 4,266,728, Cl. 239-533.800.

American Air Filter Company, Inc.: *See*—
Revell, Alan, 4,266,956, Cl. 55-478.000.

American Can Company: *See*—
Kuchenbecker, Morris W., 4,266,666, Cl. 206-461.000.
Maroszek, Raymond V., 4,266,713, Cl. 229-33.000.

American Cyanamid Company: *See*—
Baker, Pamela K.; Asato, Goro; and Dusza, John, 4,267,191, Cl. 424-285.000.
Floyd, Middleton B., Jr., 4,267,361, Cl. 560-118.000.
Rothenberg, Alan S.; and Desmond, Michael N., 4,267,372, Cl. 564-205.000.

American Home Products Corporation: *See*—
Lippmann, Wilbur, 4,267,189, Cl. 424-274.000.
Wolf, Milton, 4,267,192, Cl. 424-308.000.

American Hospital Supply Corporation: *See*—
Akhavi, David S., 4,266,558, Cl. 128-766.000.
Akhavi, David S., 4,266,559, Cl. 128-766.000.
Akhavi, David S., 4,266,751, Cl. 251-6.000.

American Seating Company: *See*—
Barecki, Chester J.; and Wilkerson, Larry A., 4,266,822, Cl. 296-65.00R.

Ameron, Inc.: *See*—
Seneker, James A., 4,267,081, Cl. 260-22.0TN.

Ammco Tools, Inc.: *See*—
Mitchell, Wallace F.; and Kamin, Arthur, 4,266,454, Cl. 82-1.00C.

Amouroux, Jacques; Rapakoulias, Demetre; and Cavadias, Simeon, to Electricite de France (Service National). Process and apparatus for the preparation of nitrogen oxides. 4,267,027, Cl. 204-179.000.

AMP Incorporated: *See*—
Hollyday, Robert D., 4,267,536, Cl. 333-186.000.
Janssen, Theodorus M.; Gilissen, Hermanus P. J.; Soes, Lucas; Van Der Sanden, Ludovicus C.; and Van Dijk, Petrus R. M., 4,267,412, Cl. 200-6.00B.
Rohde, Carl W., 4,267,404, Cl. 178-46.000.

Ampex Corporation: *See*—
Flores, Charles A., 4,267,564, Cl. 360-72.300.

Anderson, Bert O.: *See—*
Wilhelmi, Julius B.; and Anderson, Bert O., 4,266,882, Cl. 403-14.000.

Anderson, Carl E.: *See—*
Matthys, Bernard A.; Schoen, Donald W.; and Anderson, Carl E., 4,266,953, Cl. 55-294.000.

Anderson, Dale L., to Datafile Limited. Label position sensor for labeller. 4,267,004, Cl. 156-361.000.

Anderson, Nigel I. Tensioning of metal wires. 4,266,756, Cl. 256-47.000.

Anderson, Richard J.; and Henrick, Clive A., to Zoecon Corporation. Novel carboxylic acid esters. 4,267,359, Cl. 560-104.000.

Anderson, Richard J.; and Henrick, Clive A., to Zoecon Corporation. Intermediates for a sex pheramone for yellow scale. 4,267,363, Cl. 560-183.000.

Anderson, Ronald B.; Svendsen, Walter W.; Beckley, Gary H.; and Caneer, Clifford, Jr., to Longyear Company. High-low speed rotary drive mechanism. 4,266,444, Cl. 74-661.000.

Andersson, Curt E. Conveyor belt arrangement having an endless path. 4,266,661, Cl. 198-822.000.

Ando, Haruhisa: *See—*
Ohba, Shinya; Takemoto, Iwao; Nakai, Masaaki; Ando, Haruhisa; and Kubo, Masaharu, 4,267,469, Cl. 307-311.000.

Ando, Keikichi: *See—*
Ohta, Norio; Ishida, Fumihiko; Ikeda, Tadashi; Ando, Keikichi; and Sugita, Yutaka, 4,267,230, Cl. 428-336.000.

Ando, Koichi: *See—*
Kobayashi, Yoshio; Ando, Koichi; and Hyodo, Susumu, 4,267,155, Cl. 423-235.000.

Ando, Seigo, to Nippon Kokan Kabushiki Kaisha. Apparatus for non-contact measurement of distance from a metallic body using a detection coil in the feedback circuit of an amplifier. 4,267,508, Cl. 324-225.000.

Angelucci, Romano: *See—*
Cozzi, Paolo; Magni, Osvaldo; Bertone, Leone; Angelucci, Romano; and Lovisolo, Pier P., 4,267,327, Cl. 544-336.000.

Annis, Myron C., to Hooker Chemicals & Plastics Corp. Phenolic resins with improved low temperature processing stability. 4,267,141, Cl. 264-328.100.

Anzai, Shigeo: *See—*
Iwaoka, Shoji; Kaito, Hiroyuki; Anzai, Shigeo; Ushigome, Susumu; Watanabe, Yoshiaki; and Mimura, Nobuyuki, 4,266,970, Cl. 75-59.000.

Anzai, Yoshinori: *See—*
Murakami, Katsuo; Anzai, Yoshinori; Otani, Mitsuoki; and Ito, Hiroshi, 4,267,485, Cl. 313-486.000.

Appleton Machine Company: *See—*
Lamon, David E.; and Klemmer, Paul J., 4,266,475, Cl. 100-168.000.

Aquatain Partnership: *See—*
Van Leuven, James W., 4,267,168, Cl. 424-75.000.

Arai, Masatoshi: *See—*
Toyoshima, Shigeshi; Sato, Ryuichi; Ito, Koichi; Shinohara, Toshio; and Arai, Masatoshi, 4,267,172, Cl. 424-184.000.

Arai, Takeo: *See—*
Ban, Keisuke; and Arai, Takeo, 4,266,596, Cl. 164-97.000.

Arakawa Kagaku Kogyo Kabushiki Kaisha: *See—*
Okumichi, Toshiharu; and Kawatani, Kimio, 4,267,099, Cl. 260-101.000.

Arbed S.A.: *See—*
Daldrup, Heinz G.; Nothhelfer, Gunther; Franke, Friedrich H.; and Limpach, Raymond, 4,266,968, Cl. 75-42.000.

Arcamone, Federico: *See—*
Masi, Paolo; Suarato, Antonino; Bernardi, Luigi; and Arcamone, Federico, 4,267,116, Cl. 260-376.000.

Archibald, Roy D.: *See—*
Weitzman, Stewart; and Archibald, Roy D., 4,267,167, Cl. 424-52.000.

Ardal Og Sunndal Verk A.S.: *See—*
Schneider, Paul A.; and Eliassen, Carlo, 4,266,316, Cl. 15-304.000.

Argus Chemical Corporation: *See—*
Pastorino, Ronald L.; and Lewis, Roger N., 4,267,109, Cl. 260-338.000.

Arikawa, Hiroo, to San-O Industrial Co., Ltd. Miniature electric fuse. 4,267,543, Cl. 337-255.000.

Arimura, Iwao: *See—*
Takigawa, Hiroyoshi; Arimura, Iwao; Tanaka, Makoto; and Ohkuni, Shinichiro, 4,266,592, Cl. 152-209.00D.

Arlauskas, Alfonsas: *See—*
Pelchat, Paul F.; and Arlauskas, Alfonsas, 4,266,321, Cl. 16-145.000.

Arlt, Dieter: *See—*
Jautelat, Manfred; Stetter, Jorg; Arlt, Dieter; and Kramer, Wolfgang, 4,267,381, Cl. 568-419.000.

Armanet, Jean-Michel: *See—*
Sachetto, Jean-Pierre; Regnault, Alain; Cuccolo, Sergio; Tournier, Herve; and Armanet, Jean-Michel, 4,267,314, Cl. 536-53.000.

Armitage, Geoffrey D.: *See—*
Scott, Richard M.; and Armitage, Geoffrey D., 4,267,355, Cl. 560-43.000.

Arnold, Bernhard: *See—*
Lindner, Christian; Arnold, Bernhard; Kuhlmann, Dieter; Kowitz, Friedrich; and Ott, Karl-Heinz, 4,267,278, Cl. 525-2.000.

Arrow Converting Equipment, Inc.: *See—*
Mastriani, Elvin A., 4,266,737, Cl. 242-72.00B.

Asada, Hiroyuki: *See—*
Umemura, Sumio; Ohdan, Kyoji; and Asada, Hiroyuki, 4,267,385, Cl. 568-479.000.

Asahi, Akira: *See—*
Sato, Kazuo; Asahi, Akira; and Koyama, Takahiro, 4,267,198, Cl. 426-332.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Hashino, Yasuo; Hayano, Fusakazu; and Toyomoto, Kazuo, 4,267,053, Cl. 210-650.000.
Yokoyama, Takayuki; Nakayama, Yoshiaki; and Yasuda, Yasuo, 4,267,080, Cl. 260-4.00R.

Asahi Yukizai Kogyo Co., Ltd.: *See—*
Ninomiya, Youichi; Ogawa, Hirotoshi; Ueda, Tomoyuki; and Machida, Masataka, 4,266,754, Cl. 251-306.000.

Asama Chemical Co., Ltd.: *See—*
Yajima, Mizuo, 4,267,166, Cl. 424-48.000.

Asano, Hiroaki; Suzuki, Ikuo; and Enomoto, Minoru, to Toyoda-Koki Kabushiki-Kaisha. Grinding machine with truing apparatus for grinding wheel made of cubic boron nitride. 4,266,374, Cl. 51-165.870.

Asato, Goro: *See—*
Baker, Pamela K.; Asato, Goro; and Dusza, John, 4,267,191, Cl. 424-285.000.

Ascher, Gerd, to Sandoz Ltd. Cephalosporin derivatives. 4,267,321, Cl. 544-030.000.

ASEA Aktiebolag: *See—*
Torok, Vilmos, 4,267,498, Cl. 318-723.000.

Asher, Lance A., to Phillips Petroleum Company. Closure for top inside roll container. 4,266,689, Cl. 220-307.000.

Assal, Francois T.; Berman, Arnold L.; and Betaharon, Khodadad, to Communications Satellite Corporation. Resistively matched microwave PIN diode switch. 4,267,538, Cl. 333-262.000.

Atkins, John H., to A & B Industries, Inc. Bullet resistant ballistic panel carrier garment. 4,266,297, Cl. 2-2.500.

Atlantic Richfield Company: *See—*
Burk, Emmett H., Jr.; Yoo, Jin S.; Karch, John A.; and Sun, Jui-Yuan, 4,267,032, Cl. 208-113.000.

Atlas Copco Aktiebolag: *See—*
Lundstrom, Axel L., 4,266,749, Cl. 248-652.000.

Aubarede, Francis C.: *See—*
DiPalma, Hugo R.; and Aubarede, Francis C., 4,266,724, Cl. 239-195.000.

Audi NSU Auto Union Aktiengesellschaft: *See—*
Bauder, Armin, 4,266,571, Cl. 137-625.480.

Auer, Siegfried O., to Norlin Industries, Inc. Apparatus for measurement of soil moisture content. 4,266,878, Cl. 356-419.000.

Austin, John J., to Champion International Corporation. Carton with pyramid-shaped bottom and blank for forming same. 4,266,716, Cl. 229-39.00R.

Austin, Richard G.; Pretzer, Wayne R.; and Kobylinski, Thaddeus P., to Gulf Research & Development Company. Decomposition of cumene hydroperoxide and recovery of boron trifluoride catalyst. 4,267,379, Cl. 568-385.000.

Austin, Richard G.; Pretzer, Wayne R.; and Kobylinski, Thaddeus P., to Gulf Research & Development Company. Decomposition of cumene hydroperoxide using a Lewis acid catalyst. 4,267,380, Cl. 568-385.000.

Autoliv AB: *See—*
Ennerdal, Leif; and Berg, Lars E., 4,266,325, Cl. 24-230.00A.

Automobiles Peugeot: *See—*
Perez, Jean; and Carnus, Jean-Claude, 4,266,524, Cl. 123-568.000.

Avicola, Kenneth, to Jersey Nuclear-Avco Isotopes, Inc. System for increasing laser pulse rate. 4,266,854, Cl. 350-171.000.

Ayers, David L.: *See—*
White, Dale; Ayers, David L.; and Hribar, Allan E., 4,266,602, Cl. 165-124.000.

B. F. Goodrich Company, The: *See—*
Cohen, Louis, 4,267,103, Cl. 260-17.4UC.
Jones, Richard A.; and Witenhafer, Donald E., 4,267,291, Cl. 526-62.000.

Baatrup, Johannes V.; Christensen, Thorkild; Christiansen, Tage; and Thomsen, Svend E., to Danfoss A/S. Hydraulic control apparatus for servo-motor particularly for vehicle steering. 4,266,464, Cl. 91-29.000.

Baba, Takaaki: *See—*
Ishikawa, Toshiro; Kitani, Teruo; and Baba, Takaaki, 4,267,560, Cl. 358-22.000.

Babcock & Wilcox Company, The: *See—*
Hoof, Robert G., 4,267,045, Cl. 210-322.000.

Bacher, Micher, to Societe Anonyme Francaise de Ferodo. Crown-type caliper brake. 4,266,636, Cl. 188-76.000.

Backx, Leo J. J.: *See—*
Heeres, Jan; and Backx, Leo J. J., 4,267,179, Cl. 424-25.00D.

Bacus, James W., to Rush-Presbyterian-St. Luke Medical Center. Apparatus for the preparation of blood samples for automated analysis. 4,266,505, Cl. 118-699.000.

Bader, Henry: *See—*
Sparks, John W.; and Bader, Henry, 4,267,324, Cl. 544-262.000.

Bahr, Albert. Chamber type filter press for de-watering sludges and similar substances. 4,266,474, Cl. 100-118.000.

Baier, Robert E., to Calspan Corporation. Catheter for long-term emplacement. 4,266,999, Cl. 156-227.000.

Bains, Gurdip S., to Westinghouse Electric Corp. Panel joint for assembling panel members. 4,266,386, Cl. 52-584.000.

Baird Corporation: *See—*
Govaert, Johan A., 4,267,452, Cl. 250-366.000.

Baker, Pamela K.; Asato, Goro; and Dusza, John, to American Cyanamid Company. Process for enhancing growth promotion in animals. 4,267,191, Cl. 424-285.000.

Balch, Robert A.; and Kerr, Charles E., to Balch, Robert A. Cope cutter. 4,266,457, Cl. 83-745.000.

Bald, Hubert, to Maschinenfabrik Alfred Schmermund GmbH & Co. Apparatus for conveying articles. 4,266,652, Cl. 198-347.000.

Bald, Hubert, to Maschinenfabrik Alfred Schmermund GmbH & Co. Device for examining the degree of filling of a cigarette. 4,267,444, Cl. 250-227.000.

Baldoni, Carlo. Keyboard decade digital dial. 4,267,409, Cl. 179-90.00B.

Ball Corporation: *See—*
Wood, Charles L., 4,266,961, Cl. 65-29.000.

Bals, Hans G. Two-wheeled vehicle. 4,266,794, Cl. 280-227.000.

Bambi Incorporated, The: *See—*
Tabata, Kazutaka, 4,266,400, Cl. 59-35.00R.

Ban, Keisuke; and Arai, Takeo, to Honda Giken Kogyo Kabushiki Kaisha. Method of producing a unidirectional fiber-reinforced composite material. 4,266,596, Cl. 164-97.000.

Bandag Incorporated: *See—*
Ho, Morris D., 4,266,428, Cl. 73-146.000.

Barabino, William A.; and Cook, Edward J., to Safety Research & Engineering Corporation. Brake wear warning system. 4,266,633, Cl. 188-1.00A.

Barber, Ivan J., to Allen Group, Inc., The. Vehicle conveyor system having double chain drive and selectable dolly. 4,266,482, Cl. 104-172.00B.

Barecki, Chester J.; and Wilkerson, Larry A., to American Seating Company. Foldable transportation seat. 4,266,822, Cl. 296-65.00R.

Barlow, Wayne K.; and Gibbons, Wallace A., to Wescor, Inc. Electrically heated sweat collection device and method. 4,266,556, Cl. 128-760.000.

Barnaby, Roland E. Heat sealing apparatus. 4,267,005, Cl. 156-380.000.

Barnard, Walter C.; and Dahlstrom, Kenneth J., to Whirlpool Corporation. Ice maker mounting. 4,266,837, Cl. 312-351.000.

Barnhart, David A.; Britt, Ronald L.; Kroger, John E.; and Walters, David A., to Celotex Corporation, The. Ducted/ductless range hood. 4,266,528, Cl. 126-299.00D.

Barton, Derek H. R.: *See—*
Willis, Brian J.; Christenson, Philip A.; and Barton, Derek H. R., 4,267,111, Cl. 260-343.210.

Barwise, Robert D.; Sturos, John A.; and Brumm, Douglas B., to United States of America, Agriculture. Optical wood-bark segregator. 4,266,675, Cl. 209-540.000.

BASF Aktiengesellschaft: *See—*
Brand, Uwe; Fuchs, Hugo; and Schmitz, Ruediger, 4,267,105, Cl. 260-239.30A.
Buerstinghaus, Rainer; Koenig, Karl-Heinz; and Kiehs, Karl, 4,267,121, Cl. 260-465.400.
Degen, Hans-Juergen, 4,267,319, Cl. 542-434.000.
Diessel, Paul; Perner, Johannes; Leutner, Bernd; and Schlimper, Hans-Ulrich, 4,267,068, Cl. 252-179.000.
Frickel, Fritz-Frieder; Franke, Albrecht; Koenig, Horst; Lenke, Hans-Dieter; and Gries, Josef, 4,267,187, Cl. 424-274.000.
Geelhaar, Hans J.; Penzel, Erich; and Ley, Gregor, 4,267,091, Cl. 260-29.6TA.
Hagen, Helmut; and Kohler, Rolf-Dieter, 4,267,349, Cl. 548-339.000.
Motz, Herbert; Schaefer, Dieter; Huebner, Werner; and Mayer, Dieter, 4,267,203, Cl. 427-48.000.
Muenstedt, Helmut, 4,266,424, Cl. 73-15.600.
Thil, Lucien; Fischer, Martin; and Kindscher, Wolfgang, 4,267,122, Cl. 260-501.120.

Basham, Carl G., to Basham, Thomas W., a part interest. Apparatus to permit and control tilting of the header portion of a combine relative to the throat portion thereof about the axis of forward travel of the combine. 4,266,395, Cl. 56-209.000.

Basham, Thomas W.: *See—*
Basham, Carl G., 4,266,395, Cl. 56-209.000.

Bates, Herbert E.; and Strzepek, Stanley W., to Mobil Tyco Solar Energy Corporation. Guidance mechanism. 4,267,010, Cl. 156-608.000.

Battelle Memorial Institute: *See—*
Sachetto, Jean-Pierre; Regnault, Alain; Cuccolo, Sergio; Tournier, Herve; and Armanet, Jean-Michel, 4,267,314, Cl. 536-53.000.

Bauder, Armin, to Audi NSU Auto Union Aktiengesellschaft. Fuel metering valve. 4,266,571, Cl. 137-625.480.

Bauer, Richard F.: *See—*
Playfoot, Kerwin C.; Bauer, Richard F.; and Goldstein, Norman P., 4,267,454, Cl. 250-370.000.

Baumann, Heinrich; and Schmidt, Gunther, to Robert Bosch GmbH. Micro-computer system for control and diagnosis of motor vehicle functions. 4,267,569, Cl. 364-431.000.

Baumann, Niklaus, to Aerni-Leuch AG. Benzene diazonium salts and diazotype material utilizing same. 4,267,249, Cl. 430-187.000.

Bausch & Lomb Incorporated: *See—*
Clark, James A., 4,266,692, Cl. 222-94.000.

Baxter, Andrew J. G., to Beecham Group Limited. β-Lactam anti-bacterials, compositions containing them, a process for their preparation, and methods of use thereof. 4,267,177, Cl. 424-246.000.

Baxter Travenol Laboratories, Inc.: *See—*
Becker, Lawrence F.; Czuba, Leonard F.; and Laurin, Dean G., 4,266,542, Cl. 128-214.00R.
Gilbert, Robert W.; and Torau, Gunther W., 4,266,927, Cl. 425-526.000.
Grode, Gerald A.; and Miripol, Jeffrey E., 4,267,269, Cl. 435-2.000.
Jennings, C. Michael; Kitchenham, Albert; and Lamadrid, Rene, 4,266,717, Cl. 233-26.000.
Josephson, Lee, 4,267,272, Cl. 435-7.000.
Zissimopoulos, Nicholas, 4,266,697, Cl. 222-450.000.

Bayer Aktiengesellschaft: *See—*
Breuer, Wolfram; Becker, Wolf-Jurgen; Deprez, Jacques; Drope, Eckard; Kaufmann, Karl-Heinz; and Schreckling, Kurt, 4,267,030, Cl. 204-278.000.
Dhein, Rolf; Poetter, Gerswid; and Rudolph, Hans, 4,267,082, Cl. 260-23.0AR.
Findeisen, Kurt, 4,267,365, Cl. 560-205.000.
Groll, Manfred; and Wunderlich, Klaus, 4,267,107, Cl. 260-242.200.
Huhn, Helmut; and Karstens, Werner, 4,267,094, Cl. 260-29.6RW.
Jautelat, Manfred; Stetter, Jorg; Arlt, Dieter; and Kramer, Wolfgang, 4,267,381, Cl. 568-419.000.
Kaiser, Reinhard; and Steffan, Guido, 4,267,346, Cl. 548-262.000.
Kersting, Elmar; and Niessen, Heinz J., 4,266,962, Cl. 71-90.000.
Knops, Hans-Joachim; Heine, Hans-Georg; Draber, Wilfried; and Brandes, Wilhelm, 4,267,186, Cl. 424-272.000.
Konig, Klaus; Schreckenberg, Manfred; Lindner, Christian; Suling, Carlhans; and Freitag, Dieter, 4,267,303, Cl. 528-171.000.
Kyri, Hans; and Dobbers, Jurgen, 4,267,058, Cl. 210-716.000.
Lindner, Christian; Arnold, Bernhard; Kuhlmann, Dieter; Kowitz, Friedrich; and Ott, Karl-Heinz, 4,267,278, Cl. 525-2.000.
Scholl, Hans-Joachim; and Zenner, Armin, 4,267,353, Cl. 560-24.000.
Selbeck, Harald; Wulff, Claus; Hucks, Uwe; Tresper, Erhard; and Vernaleken, Hugo, 4,267,127, Cl. 260-973.000.
Stetter, Jorg; Draber, Wilfried; Thomas, Rudolf; and Lunkenheimer, Winfried, 4,267,338, Cl. 548-143.000.

Bayer, Karl; Butt, Heinz G.; and Salewski, Jurgen, to Gutehoffnungshutte Sterkrade AG; and Fa. Bilfinger & Berger. Spherical joint for connecting a concrete tower supporting a water surface foundation to a sea foundation. 4,266,888, Cl. 405-202.000.

Bayerische Motoren Werke Aktiengesellschaft: *See—*
Martin, Harry, 4,266,648, Cl. 192-85.0AA.

BBC Brown, Boveri & Co., Ltd.: *See—*
Germann, Willy, 4,266,603, Cl. 165-171.000.

Beal, Geraldine F. Protective garment. 4,266,299, Cl. 2-46.000.

Beaune, Daniel. Process for smooth cut printing. 4,267,028, Cl. 204-181.00R.

Beck, Boyd R.; Sher, Frank T.; and Tiers, George V. D., to Minnesota Mining & Manufacturing Company. Sulfonato-organosilanol compounds and aqueous solutions thereof. 4,267,213, Cl. 427-292.000.

Beck, Hans-Joachim: *See—*
Schmidt, Karl; Hansch, Ferdinand; Rombrecht, Hans-Malte; and Beck, Hans-Joachim, 4,267,232, Cl. 428-379.000.

Becker, Lawrence F.; Czuba, Leonard F.; and Laurin, Dean G., to Baxter Travenol Laboratories, Inc. EVA Formulation having improved properties. 4,266,542, Cl. 128-214.00R.

Becker, Wolf-Jurgen: *See—*
Breuer, Wolfram; Becker, Wolf-Jurgen; Deprez, Jacques; Drope, Eckard; Kaufmann, Karl-Heinz; and Schreckling, Kurt, 4,267,030, Cl. 204-278.000.

Beckley, Gary H.: *See—*
Anderson, Ronald B.; Svendsen, Walter W.; Beckley, Gary H.; and Cancer, Clifford, Jr., 4,266,444, Cl. 74-661.000.

Beecham Group Limited: *See—*
Baxter, Andrew J. G., 4,267,177, Cl. 424-246.000.
Luk, Kong; Clayton, John P.; and Rogers, Norman H., 4,267,316, Cl. 542-427.000.
Smith, Richard A. G., 4,267,273, Cl. 435-44.000.
Watts, Eric A., 4,267,175, Cl. 424-244.000.

Behn, Rudolf; Hoppe, Lutz; and Bohmer, Branislav, to Wolff Walsrode Aktiengesellschaft. Auxiliary for improving retention, dewatering and working up, particularly in the manufacture of paper. 4,267,059, Cl. 210-736.000.

Behrendt, Bruce O.; Cisneros, Ignacio L.; Stephenson, Ronald B.; and Stephenson, Donald R., to Solar Southwest. Rooftop solar energy collector panel. 4,266,531, Cl. 126-449.000.

Beier, Kurt W.: *See—*
Ruckstuhl, Konrad; Silvano, Serafin L.; and Beier, Kurt W., 4,266,676, Cl. 209-672.000.

Beler, Lloyd A. Camper unit for use with a dump truck. 4,266,823, Cl. 296-164.000.

Bell, John L.: *See—*
Perkey, Conrad G.; and Bell, John L., 4,266,595, Cl. 164-41.000.

Bell, Oliver A., Jr.; Gilleland, Randall C.; and Chance, Davey J., to Colt Industries Operating Corp. Power supply circuit of the high voltage type for electrical discharge machining apparatus. 4,267,422, Cl. 219-69.00C.

Bell, Oliver A., Jr.; Gilleland, Randall C.; and Chance, Davey J., to Colt Industries Operating Corp. Protection circuit for electrical discharge machining power supply. 4,267,423, Cl. 219-69.00S.

Bell, Richard P.; Rill, Karl F.; and Butler, John C., to Richard Equipment Company, Inc. Optoelectronic device for automatically inspecting a group of cigarettes or the like. 4,266,674, Cl. 209-536.000.

Bell Telephone Laboratories, Incorporated: *See—*
Benton, Janet L.; Doherty, Charles J.; Kimerling, Lionel C.; and Leamy, Harry J., 4,266,986, Cl. 148-1.500.
Johnson, Bertrand H.; and Paola, Carl R., 4,267,559, Cl. 357-81.000.
Johnson, David W., Jr.; and Vogel, Eva M., 4,267,065, Cl. 252-62.620.
Silfvast, William T.; Szeto, Leo H.; and Wood, Obert R., II, 4,267,525, Cl. 331-94.50G.

Beloit Corporation: *See—*
North, Merle W., 4,267,017, Cl. 162-190.000.

Belousov, Anatoly V.: *See*—
Gaun, Viktor A.; Belousov, Anatoly V.; Petukhov, Vadim D.; Suxov, Gennady I.; Belyaev, Nikolai A.; Alyabiev, Vitaly K.; and Rassomakhin, Klimenty E., 4,266,465, Cl. 91-234.000.

Belyaev, Nikolai A.: *See*—
Gaun, Viktor A.; Belousov, Anatoly V.; Petukhov, Vadim D.; Suxov, Gennady I.; Belyaev, Nikolai A.; Alyabiev, Vitaly K.; and Rassomakhin, Klimenty E., 4,266,465, Cl. 91-234.000.

Benard, David J.: *See*—
McDermott, William E.; Benard, David J.; Pchelkin, Nicholas R.; and Bousek, Ronald R., 4,267,526, Cl. 331-94.50G.

Bendall, Wilfrid H. Segmental roller drive chain. 4,266,435, Cl. 474-227.000.

Bender, Hans; Graf, Rupprecht; Unkelbach, Karl-Heinz; and Zabel, Wolf, to Klockner-Humboldt-Deutz AG. Method and apparatus for cleaning a matrix of a wet magnetic separator. 4,266,982, Cl. 134-18.000.

Bendix Corporation, The: *See*—
Alice, Martin B.; and Grass, John W., 4,266,345, Cl. 33-169.00R.
Bounds, Peter, 4,267,575, Cl. 364-565.000.
Lewis, David L., 4,266,895, Cl. 409-232.000.
Marsh, Edward K.; and Nelson, Dean R., 4,266,843, Cl. 339-97.00R.
Sherwood, Cy E., 4,266,841, Cl. 339-89.00C.
Woo, Ji Y., 4,266,640, Cl. 188-363.000.

Benedick, Edward H., to Regenerative Environmental Equipment Co., Inc. Anti-pollution thermal regeneration apparatus. 4,267,152, Cl. 422-111.000.

Benson, Robert A., to Seapower, Inc. Immiscible liquid separating. 4,267,043, Cl. 210-241.000.

Benton, Janet L.; Doherty, Charles J.; Kimerling, Lionel C.; and Leamy, Harry J., to Bell Telephone Laboratories, Incorporated. Passivation of defects in laser annealed semiconductors. 4,266,986, Cl. 148-1.500.

Benton, Kenneth C.; White, James F.; Uebele, Curtis E.; and Weinert, Raymond J., Jr., to Standard Oil Company, The. Addition of chlorine compound to Ziegler polymerization process. 4,267,292, Cl. 526-79.000.

Berens, Mathew, to Nippon Cable System Inc. Steering unit. 4,266,440, Cl. 74-501.00R.

Berg, Lars E.: *See*—
Ennerdal, Leif; and Berg, Lars E., 4,266,325, Cl. 24-230.00A.

Berger, Herbert; Gall, Rudi; Kampe, Wolfgang; Bicker, Uwe; and Kuhn, Rolf, to Boehringer Mannheim, GmbH. Immune-stimulating and cancerostatic 1-acyl-2-cyanoaziridines. 4,267,174, Cl. 424-244.000.

Bergman, Lawrence J., to Crown Controls Corporation. Cable and hose guide. 4,266,744, Cl. 248-49.000.

Bergstrom, Donald E.; and Ruth, Jerry L., to University of California, The Regents of the. C-5 Substituted cytosine nucleosides. 4,267,171, Cl. 424-180.000.

Bergveld, Piet, to U.S. Philips Corporation. Device for measuring a quantity which influences a field-effect transistor. 4,267,504, Cl. 324-62.000.

Berick, Alan C., to Varian Associates, Inc. Radioactivity detection in high-pressure liquid chromatography. 4,267,451, Cl. 250-328.000.

Berman, Arnold L.: *See*—
Assal, Francois T.; Berman, Arnold L.; and Betaharon, Khodadad, 4,267,538, Cl. 333-262.000.

Bernardi, Luigi: *See*—
Masi, Paolo; Suarato, Antonino; Bernardi, Luigi; and Arcamone, Federico, 4,267,116, Cl. 260-376.000.

Bertone, Leone: *See*—
Cozzi, Paolo; Magni, Osvaldo; Bertone, Leone; Angelucci, Romano; and Lovisolo, Pier P., 4,267,327, Cl. 544-336.000.

Best, Albert B., to Kanthal Corporation, The. Electric resistance heating element. 4,267,435, Cl. 219-552.000.

Betaharon, Khodadad: *See*—
Assal, Francois T.; Berman, Arnold L.; and Betaharon, Khodadad, 4,267,538, Cl. 333-262.000.

Bethlehem Steel Corporation: *See*—
Weiskopf, Daniel A., 4,267,024, Cl. 204-15.000.

Betzl, Hermann; Kuenemund, Friedrich; and Schreiber, Roland, to Siemens Aktiengesellschaft. Switching circuit consisting of CTD lines. 4,267,535, Cl. 333-165.000.

Bianchi, Giuseppe: *See*—
de Nora, Vittorio; Nidola, Antonio; Spaziante, Placido M.; and Bianchi, Giuseppe, 4,267,025, Cl. 204-82.000.

Bicker, Uwe: *See*—
Berger, Herbert; Gall, Rudi; Kampe, Wolfgang; Bicker, Uwe; and Kuhn, Rolf, 4,267,174, Cl. 424-244.000.

Bieberbach, George, to Westinghouse Electric Corp. Heat exchanger with double walled tubes. 4,266,600, Cl. 165-76.000.

Bielby, Robert A. Method for making a cutting tool. 4,266,449, Cl. 76-101.00A.

Bielomatick Leuze GmbH & Co.: *See*—
Buck, Hermann, 4,266,761, Cl. 270-58.000.

Bienz, Edward F., to General Electric Company. Lacing machine needle guard. 4,266,492, Cl. 112-121.200.

Bigazzi, Mario, to Serono Laboratories Inc. Process for obtaining human relaxin from fetal membranes. 4,267,101, Cl. 260-112.00R.

Biggs, Paul G. Control cylinder with removable piston. 4,266,468, Cl. 92-63.000.

Biglin, Timothy J., to Horstmann Gear Company Limited, The. Failure sensor for a gas detector. 4,267,505, Cl. 324-65.00R.

Bijen, Jan M. J. M., to Stamicarbon, B.V. Production of thin, plastic-reinforced, hydraulically bound boards. 4,267,136, Cl. 264-87.000.

Bilane, Glenn B.; Rubin, Lawrence M.; Soffa, Albert; and Vilenski, Dan, to Kulicke and Soffa Industries Inc. Wire bonding apparatus. 4,266,710, Cl. 228-4.500.

Biocarn Limited: *See*—
De Felice, Stephen L., 4,267,163, Cl. 424-9.000.

Birjukov, Mikhail N.; Maslov, Gennady N.; Smorodinnikov, Vladimir P.; Kulikov, Anatoly P.; Udilova, Ida G.; Zuev, Vladimir K.; Lukyanov, Anatoly A.; Tolstopyatov, Konstantin S.; Kalinichev, Alexandr E.; and Zhabin, Ivan Y. Mold for manufacturing abrasive segments. 4,266,922, Cl. 425-182.000.

Birk, John R.; Kelley, Robert B.; and Tella, Richard P., to State of Rhode Island, Board of Regents for Education of the. Apparatus for acquiring workpieces from a storage bin or the like. 4,266,905, Cl. 414-627.000.

Black Clawson Company, The: *See*—
Martin, Andrew C., 4,267,035, Cl. 209-273.000.

Black & Decker Inc.: *See*—
Overy, Colin, 4,266,376, Cl. 51-170.00R.

Black, Raymond C.: *See*—
Forster, Ian C.; Patrick, James F.; Tong, Yit C.; Black, Raymond C.; and Clark, Graeme M., 4,267,410, Cl. 179-107.0BC.

Black, Robin M., to Cadbury-Schweppes Limited. Bleaching agents. 4,267,325, Cl. 544-285.000.

Blackburn, David; and Wild, Malcolm S., to Yorkshire Chemicals Limited. Method for dyeing acrylonitrile polymer and copolymer fibres. 4,266,940, Cl. 8-538.000.

Blakeslee, Theodore R., III: *See*—
Kurtz, Stuart J.; Blakeslee, Theodore R., III; and Scarola, Leonard S., 4,267,146, Cl. 264-564.000.

Bliss & Laughlin Industries Incorporated: *See*—
Patel, Ravin J.; and Petro, John, 4,266,650, Cl. 193-35.0TE.

Block Drug Company Inc.: *See*—
Yeh, Kuo-Chen; and Mazzella, Frank, 4,267,164, Cl. 424-44.000.

Blom, Friedrich: *See*—
Achelpohl, Fritz; Feldkaper, Richard; and Blom, Friedrich, 4,266,654, Cl. 198-425.000.

Bloom, Arlene N., executrix: *See*—
Bloom, Stanley M., deceased; and Sachdev, Krishna G., 4,267,254, Cl. 430-245.000.
Bloom, Stanley M., deceased; and Sachdev, Krishna G., 4,267,256, Cl. 430-251.000.

Bloom, Stanley M., deceased (by Bloom, Arlene N., executrix); and Sachdev, Krishna G., to Polaroid Corporation. Photographic process. 4,267,254, Cl. 430-245.000.

Bloom, Stanley M., deceased (by Bloom, Arlene N., executrix); and Sachdev, Krishna G., to Polaroid Corporation. Novel silver complexing agents. 4,267,256, Cl. 430-251.000.

Blue, Walter L. Resilient rotatable toy. 4,266,781, Cl. 273-420.000.

Bluestein, Ben A., to General Electric Company. Process for preparing M-stopped silicone fluids from silanol fluids. 4,267,298, Cl. 528-34.000.

Blum, Alvin S. Hypodermic needle protection means. 4,266,543, Cl. 128-218.00N.

Blum, Helmut; Hempel, Hans-Ulrich; and Worms, Karl-Heinz, to Henkel Kommanditgesellschaft auf Aktien. Hydroxyalkane diphosphonic acids. 4,267,108, Cl. 260-326.610.

Bobst, S.A.: *See*—
Moyroud, Louis M.; Morgan, Grant T.; and Casanova, Bernard A., 4,266,864, Cl. 354-15.000.

Bodart, Detlef, to Merck Patent Gesellschaft mit beschrankter Haftung. Photometer with interchangeable calibration cards. 4,266,877, Cl. 356-414.000.

Boddenberg, Klaus; Waldmann, Jurgen; and Demmer, Manfred, to Mannesmann Demag AG. Method for protecting power connected machine part pairs from friction corrosion. 4,267,216, Cl. 427-397.800.

Bodenseewerk Perkin-Elmer & Co.: *See*—
Witte, Wolfgang, 4,267,572, Cl. 364-498.000.

Bodine, Albert G. Down hole cycloidal drill drive. 4,266,619, Cl. 175-55.000.

Bodlaj, Viktor, to Siemens Aktiengesellschaft. Method and device for contact-free interval or thickness measurement by control of the direction of a light ray beam. 4,266,875, Cl. 356-381.000.

Boehringer Mannheim, GmbH: *See*—
Berger, Herbert; Gall, Rudi; Kampe, Wolfgang; Bicker, Uwe; and Kuhn, Rolf, 4,267,174, Cl. 424-244.000.

Boeing Company, The: *See*—
Murphy, Patrick, 4,266,741, Cl. 244-54.000.

Bohlen, Harald; Greschner, Johann; Kulcke, Werner; and Nehmiz, Peter, to International Business Machines Corporation. Exposure process. 4,267,259, Cl. 430-296.000.

Bohm, Leslie E.: *See*—
Jackson, W. Shaun; and Bohm, Leslie E., 4,266,702, Cl. 224-31.000.

Bohmer, Branislav: *See*—
Behn, Rudolf; Hoppe, Lutz; and Bohmer, Branislav, 4,267,059, Cl. 210-736.000.

Bollag, Werner; Ruegg, Rudolf; and Ryser, Gottlieb, to Hoffmann-La Roche Inc. 2,6-Dichloro-4-methoxy-5-methyl-benzene aldehydes. 4,267,382, Cl. 568-442.000.

Bolliger, Frederic E.: *See*—
Sumegi, Robert B.; Woodhouse, Geoffrey D.; Mattson, George B.; Jansen, Harvey B.; Bolliger, Frederic E.; and Hatch, Robert A., 4,266,401, Cl. 60-39.16R.

Bolt Associates, Inc.: *See*—
Chelminski, Paul, 4,266,844, Cl. 339-218.00M.

Bond, James W.; Alsup, James M.; Speiser, Jeffrey M.; Whitehouse, Harper J.; and Lagnado, Isaac, to United States of America, Navy. CCD Analog and digital correlators. 4,267,580, Cl. 364-824.000.

Bonin, Pete J., Jr.; Evans, Marion E.; and Bonin, Pete J., Sr., to IMC International Management Consultants, Inc. Portable progressive and intermittent traction machine. 4,266,537, Cl. 128-75.000.

Bonin, Pete J., Sr.: *See*—
Bonin, Pete J., Jr.; Evans, Marion E.; and Bonin, Pete J., Sr., 4,266,537, Cl. 128-75.000.

Bonnemann, Helmut; and Samson, Marc, to Studiengesellschaft Kohle GmbH. Process for preparation of 2-vinylpyridine from acetylene and acrylonitrile. 4,267,329, Cl. 546-4.000.

Book, deceased; Nils E. E., to AB Motala Verkstad. Apparatus for surface embossing man-made lignocellulosic board. 4,266,925, Cl. 425-387.100.

Boop, Gene T., to SIE, Inc. Arming device and method. 4,266,613, Cl. 166-299.000.

Booth, Frank B., to Celanese Corporation. Hydrocarbonylation. 4,267,383, Cl. 568-454.000.

Borg-Warner Corporation: *See*—
Hechenbleikner, Ingenuin; Enlow, William P.; and Weis, James H., 4,267,358, Cl. 560-75.000.
Wiese, Winfred J., 4,266,786, Cl. 277-40.000.

Bornefeld, Horst; Comberg, Gerd; Engel, Werner; and Neyer, Johannes, to Goetze AG. Apparatus for deburring edges. 4,266,373, Cl. 51-99.000.

Bosotti, Luciano, to CSELT, Centro Studi e Laboratori Telecomunicazioni S.P.A. Fiber-optical data-communication system using carriers of different wavelengths. 4,267,590, Cl. 370-3.000.

Bott, John A. Vehicle article carrier. 4,266,708, Cl. 224-326.000.

Boudet, Georges; and Desmoulins, Jean C., to SKF Compagnie d'Applications Mecaniques. Automatic device for screwing and handling bolts. 4,266,451, Cl. 81-57.350.

Boudreau, James C.; and White, Thomas D., to University of Texas. Dog food flavors. 4,267,195, Cl. 426-2.000.

Bounds, Peter, to Bendix Corporation, The. Wheel speed signal-producing system for skid control. 4,267,575, Cl. 364-565.000.

Bourke, Robert F.; and Johansen, David K., to Gould Inc. Control cooling means. 4,267,500, Cl. 318-806.000.

Bousaid, Issam S.; and Ho, Benny K-C, to Texaco Inc. Oil recovery method employing alternate slugs of surfactant and fresh water solution of polymer. 4,266,611, Cl. 166-273.000.

Bousek, Ronald R.: *See*—
McDermott, William E.; Benard, David J.; Pchelkin, Nicholas R.; and Bousek, Ronald R., 4,267,526, Cl. 331-94.50G.

Bowman, Peter, to Warner-Lambert Company. Razor handle for mounting pivotable razor blade cartridges. 4,266,340, Cl. 30-89.000.

Boyd, Clay E.; Jones, John C.; and Mumola, Joanne L., to International Business Machines Corporation. Rotatable raster scan display. 4,267,555, Cl. 340-748.000.

Boyer, Michel: *See*—
Delaunay, Antoine; and Ecolasse, Guy, 4,266,832, Cl. 301-48.000.

Boykin, Otis F.: *See*—
Holmes, Curtis L.; Faber, William M., Sr.; Francis, Gaylord L.; and Boykin, Otis F., 4,267,074, Cl. 252-514.000.

Braatz, Robert E., to Airco, Inc. Anesthesia machine having proportion limiting control system. 4,266,573, Cl. 137-630.180.

Bradford, Jay H., to Eaton Corporation. Flow control device in a protective housing. 4,266,576, Cl. 138-40.000.

Braitsch, Hans: *See*—
Ortwein, Hermann; and Braitsch, Hans, 4,266,719, Cl. 238-283.000.

Brambles Holdings Limited: *See*—
Daly, Geoffrey J., 4,266,678, Cl. 211-194.000.

Brand, Uwe; Fuchs, Hugo; and Schmitz, Ruediger, to BASF Aktiengesellschaft. Process for the rapid cooling of gases which contain caprolactam vapor. 4,267,105, Cl. 260-239.30A.

Brandes, Wilhelm: *See*—
Knops, Hans-Joachim; Heine, Hans-Georg; Draber, Wilfried; and Brandes, Wilhelm, 4,267,186, Cl. 424-272.000.

Brastad, William A., to General Mills, Inc. Packaged food item and method for achieving microwave browning thereof. 4,267,420, Cl. 219-10.55E.

Bratkowski, Walter V.: *See*—
Maier, Alfred E.; and Bratkowski, Walter V., 4,267,419, Cl. 200-288.000.

Bratt, Sven-Erik: *See*—
Nygaard, Kurt; Mattsson, Kjell; and Bratt, Sven-Erik, 4,267,567, Cl. 362-46.000.

Braun Aktiengesellschaft: *See*—
Milutzki, Udo; Gaus, Harry; Schotte, Dietwald; and Ramspeck, Klaus, 4,266,783, Cl. 369-41.000.

Braun, Rudiger, to Siemens Aktiengesellschaft. Control unit for multiphase static converter. 4,267,570, Cl. 364-480.000.

Breiter, Manfred W.: *See*—
Park, Dong-Sil;; Breiter, Manfred W.; and King, Randall N., 4,266,712, Cl. 228-175.000.

Bresina, Larry J.; and Hipp, Richard D., to Minnesota Mining and Manufacturing Company. Multiple roll developing apparatus. 4,266,868, Cl. 355-3.0DD.

Breuer, Wolfram; Becker, Wolf-Jurgen; Deprez, Jacques; Drope, Eckard; Kaufmann, Karl-Heinz; and Schreckling, Kurt, to Bayer Aktiengesellschaft. Apparatus for checking gas analysis devices. 4,267,030, Cl. 204-278.000.

Bridgestone Tire Company Limited: *See*—
Kitazawa, Yoichi; Sato, Takeshi; and Tsuji, Hisao, 4,266,995, Cl. 156-123.00R.
Matsuda, Akira; Goshima, Norio; Yasuda, Shigeo; Iwasaki, Motoaki; and Nishino, Hiroshi, 4,267,546, Cl. 340-58.000.
Takigawa, Hiroyoshi; Arimura, Iwao; Tanaka, Makoto; and Ohkuni, Shinichiro, 4,266,592, Cl. 152-209.00D.

Brieger, Emmett F.: *See*—
LaBorde, Russel G.; and Brieger, Emmett F., 4,266,605, Cl. 166-97.000.

Brinkman, Willem, to Holec N.V. Electromagnetically actuated pumps. 4,266,523, Cl. 123-499.000.

Bristol Marine, Inc.: *See*—
Greenleaf, John M., 4,266,357, Cl. 42-1.00Z.

Bristol-Myers Company: *See*—
Kaneko, Takushi; Essery, John M.; Schmitz, Henry; and Doyle, Terrence W., 4,267,113, Cl. 260-345.200.

Britt, Ronald L.: *See*—
Barnhart, David A.; Britt, Ronald L.; Kroger, John E.; and Walters, David A., 4,266,528, Cl. 126-299.00D.

Brock, Kenneth A., to Christensen, Inc. Well casing window mill. 4,266,621, Cl. 175-329.000.

Brooker, Bernard F. Ball. 4,267,217, Cl. 428-11.000.

Brooks, Burton; and Brooks, Richard J., to Chemithon Corporation, The. Sulfonating method. 4,267,119, Cl. 260-458.00R.

Brooks, Richard J.: *See*—
Brooks, Burton; and Brooks, Richard J., 4,267,119, Cl. 260-458.00R.

Bross, Kenneth L., to Roper Corporation. Engine power pack assembly having anti-vibration features. 4,266,515, Cl. 123-198.00E.

Broutman, Lawrence J. Composites of polymeric material and thermosetting resinous fibers and particles and method. 4,267,285, Cl. 525-145.000.

Brovold, Thomas E. Selectable depth water retriever. 4,266,429, Cl. 73-425.40R.

Brown, Carl D.: *See*—
VanGinhoven, Robert M.; and Brown, Carl D., 4,266,394, Cl. 56-94.000.

Brown, Donald G., to United States of America, Air Force. Incident radiation absorber. 4,267,523, Cl. 331-94.50C.

Brown Group, Inc.: *See*—
Fleer, Thomas P.; and Hannebaum, Reed E., 4,267,429, Cl. 219-215.000.

Brown, Harold B. Plywood driving tool. 4,266,586, Cl. 145-1.00B.

Brown, Robert; and Proulx, Paul A., to Geoco, Inc. Dual scintillation detector for determining grade of uranium ore. 4,267,446, Cl. 250-255.000.

Brown, Ronald O. Electric switch device. 4,267,418, Cl. 200-163.000.

Brown & Root, Inc.: *See*—
Corder, Paul R., 4,266,887, Cl. 405-196.000.

Brown, Wade R.; and Mannhardt, Werner, to Alco Foodservice Equipment Company. Flow valve arrangement for beverage dispenser. 4,266,726, Cl. 239-406.000.

Brown, William F., to Weston Research Corporation. Adherent, flame-resistant acrylic decorative coating composition for wall board and the like. 4,267,089, Cl. 260-29.6MM.

Brown & Williamson Tobacco Corporation: *See*—
Litzinger, Elmer F., 4,266,561, Cl. 131-341.000.

Bruckner, Elmar; Gausmann, Hans; Schipper, Philipp; and Tausch, Walter, to Carl Zeiss-Stiftung. Evaluation instrument for automatic photometric analysis of liquid samples. 4,267,149, Cl. 422-65.000.

Brueggeman, Henry C.: *See*—
Brueggeman, Michael B., 4,267,414, Cl. 200-86.500.

Brueggeman, Michael B., to Brueggeman, Michael B.; and Brueggeman, Henry C. Foot control for snow plows. 4,267,414, Cl. 200-86.500.

Brugger, Robert, to Langbein-Pfanhauser Werke AG. Solar collector with blackened layer facing insulation. 4,267,218, Cl. 428-35.000.

Brumm, Douglas B.: *See*—
Barwise, Robert D.; Sturos, John A.; and Brumm, Douglas B., 4,266,675, Cl. 209-540.000.

Brun, Craig W.; and Hand, Wilfred L., to GTE Products Corporation. TV antenna isolation system. 4,267,529, Cl. 333-12.000.

Brun, Craig W.; and Hand, Wilfred L., to GTE Products Corporation. Acquisition delay circuit for a PLL reference oscillator. 4,267,602, Cl. 455-182.000.

Bruner, Frank D.; and Kuzela, Joseph, Jr., to Vapor Corporation. Control system for economic operation of multiple locomotive trains. 4,266,485, Cl. 105-61.000.

Bruner, James D. Pressure indicators for inflatable cuff-type catheters. 4,266,550, Cl. 128-349.00B.

Brunnee, Curt: *See*—
Feser, Karl; and Brunnee, Curt, 4,267,448, Cl. 250-281.000.

Bruns, Klaus: *See*—
Schaper, Ulf-Armin; Conrad, Jens; and Bruns, Klaus, 4,267,075, Cl. 252-522.00R.

Brunson, John W., to United States of America, National Aeronautics and Space Administration. Decommutator patchboard verifier. 4,267,594, Cl. 371-20.000.

Brunswick Corporation: *See*—
Stiner, Roy E., 4,266,739, Cl. 242-84.21R.
Tyner, Alfred E., 4,266,514, Cl. 123-55.00R.

Buchanan, James C., to International Business Machines Corporation. Paper insertion apparatus. 4,266,880, Cl. 400-550.000.

Buchholz, Fredric L.: *See*—
Tomalia, Donald A.; and Buchholz, Fredric L., 4,267,350, Cl. 548-354.000.

Buchin, Michael P.: *See—*
McKeighen, Ronald E.; and Buchin, Michael P., 4,267,584, Cl. 367-11.000.

Buck, Hermann, to Bielomatick Leuze GmbH & Co. Apparatus for placing terminal sheets or the like on to layers of sheets. 4,266,761, Cl. 270-58.000.

Buerstinghaus, Rainer; Koenig, Karl-Heinz; and Kiehs, Karl, to BASF Aktiengesellschaft. Preparation of 2,2-dimethyl-4-cyano-butyraldoxime N-methyl-carbamate. 4,267,121, Cl. 260-465.400.

Bundy, Gordon L., to Upjohn Company, The. 2-Decarboxy-2-aminomethyl-11a-methano-TXA$_2$ compounds. 4,267,315, Cl. 542-400.000.

Buning, Robert: *See—*
Hanisch, Horst; Rodder, Karl-Martin; Buning, Robert; and Hass, Hans-Jurgen, 4,267,093, Cl. 260-29.60H.

Bunker Ramo Corporation: *See—*
Jurca, Joseph A., 4,266,500, Cl. 114-333.000.

Bunkowski, Kenneth D.: *See—*
Jaisle, Richard F.; and Bunkowski, Kenneth D., 4,267,240, Cl. 428-484.000.

Bunya, Shinichi: *See—*
Miura, Konoe; Eguchi, Chihiro; Takahashi, Yoshihiro; Oshima, Akinobu; Torige, Kazuo; and Bunya, Shinichi, 4,267,260, Cl. 430-302.000.

Burack, Robert D., to Westinghouse Electric Corp. Nuclear steam generator wrapper and shell assembly and method for assembling. 4,267,020, Cl. 176-87.000.

Burgess, James H. Boot pull. 4,266,701, Cl. 223-116.000.

Burk, Emmett H., Jr.; Yoo, Jin S.; Karch, John A.; and Sun, Jui-Yuan, to Atlantic Richfield Company. Demetallization process for a conversion catalyst. 4,267,032, Cl. 208-113.000.

Burkhart, Dean C.; Harper, Lee R.; and Sommerfeld, Eugene G., to Du Pont de Nemours, E. I., and Company. Epoxy-urethanes based on copolyesters. 4,267,288, Cl. 525-438.000.

Burns, David L. Rotating oscillatory motion power take-off. 4,266,434, Cl. 74-61.000.

Burns, Richard D., to General Electric Company. Methods for making dynamoelectric machine phase insulators. 4,266,994, Cl. 156-73.200.

Burns, William K., to United States of America, Navy. Integrated bias for waveguide amplitude modulator. 4,266,850, Cl. 350-96.140.

Burro-Badger Corporation: *See—*
Wuerflein, James G., 4,266,809, Cl. 280-766.000.

Burrus, Thomas W., to RCA Corporation. Stylus lifting/lowering actuator with improved electromagnetic motor. 4,266,785, Cl. 369-216.000.

Bussink, Jan; and Heuschen, Jean M. H., to General Electric Company. Composition of a selectively hydrogenated block copolymer of a vinyl aromatic compound and a diolefin, a polycarbonate and an amorphous polyester. 4,267,096, Cl. 260-40.00R.

Butler, John C.: *See—*
Bell, Richard P.; Rill, Karl F.; and Butler, John C., 4,266,674, Cl. 209-536.000.

Butler, L. David: *See—*
DeLuca, Patrick P.; and Butler, L. David, 4,267,449, Cl. 250-303.000.

Butler, William J. Replaceable liner for the discharge assembly of a rotary grinding mill or the like. 4,266,733, Cl. 241-171.000.

Butt, Heinz G.: *See—*
Bayer, Karl; Butt, Heinz G.; and Salewski, Jurgen, 4,266,888, Cl. 405-202.000.

Byerley, Thomas L., to NL Industries, Inc. Abandoned borehole compositions. 4,267,062, Cl. 252-8.55R.

C. A. Schroeder Inc.: *See—*
Schroeder, Clifford A.; Fogg, Ralph L.; Farason, Harry J.; and Voorhees, Robert E., 4,266,470, Cl. 98-40.00R.

C. Itoh & Co., Ltd.: *See—*
Uchiyama, Hiroshi, 4,267,110, Cl. 260-340.700.

C. L. Frost & Son, Inc.: *See—*
Frost, Charles C.; Gurney, Gerald W.; and Sytsma, Frederick R., 4,266,657, Cl. 198-687.000.
Frost, Charles C.; and Weis, Siegfried K., 4,266,658, Cl. 198-687.000.

C.P.G. Products Corp.: *See—*
Cummings, Charles A.; and Rodmaker, Gerald, 4,266,365, Cl. 46-33.000.

C-R-O, Inc.: *See—*
Ludwigson, Robert G., 4,266,989, Cl. 148-9.00R.

Cabbiness, Dale K.; Carel, Alfred B.; and Leslie, W. Dean, to Conoco, Inc. Uranium prospecting method. 4,267,445, Cl. 250-255.000.

Cable Belt, Ltd.: *See—*
Thomson, Ian M., 4,266,396, Cl. 57-221.000.

Cadbury-Schweppes Limited: *See—*
Black, Robin M., 4,267,325, Cl. 544-285.000.

Calderone, Michael P. Exercise device. 4,266,766, Cl. 272-117.000.

California Institute of Technology: *See—*
Rembaum, Alan, 4,267,234, Cl. 428-403.000.
Rembaum, Alan; and Margel, Shlomo, 4,267,235, Cl. 428-407.000.

Calspan Corporation: *See—*
Baier, Robert E., 4,266,999, Cl. 156-227.000.

Calvert, Seymour, to Air Pollution Technology, Inc. Particle scrubber and related method. 4,266,951, Cl. 55-84.000.

Cama, Lovji D.; and Christensen, Burton G., to Merck & Co., Inc. 5-Substituted-1-carba-pen-2-em-3-carboxylic acid. 4,267,188, Cl. 424-274.000.

Campbell, Delmer E.; and Gargis, John T. Animal trap locking mechanism. 4,266,362, Cl. 43-66.000.

Campbell, Henry F.: *See—*
Darkes, Paul R.; Campbell, Henry F.; and Douglas, George H., 4,267,388, Cl. 568-642.000.

Campbell, Kenneth J., to United States of America, Navy. Modulation monitoring apparatus. 4,267,600, Cl. 455-115.000.

Campbell, Richard W., to General Electric Company. Modified polyester compositions. 4,267,286, Cl. 525-176.000.

Canada Square Management Ltd.: *See—*
Rynyk, Douglas W., 4,266,900, Cl. 414-285.000.

Canadian Gas Research Institute: *See—*
Schaus, Orland O., 4,266,513, Cl. 122-155.00A.

Canda, William R., to United States of America, Air Force. Chemical-biological agent protective hood. 4,266,301, Cl. 2-410.000.

Caneer, Clifford, Jr.: *See—*
Anderson, Ronald B.; Svendsen, Walter W.; Beckley, Gary H.; and Caneer, Clifford, Jr., 4,266,444, Cl. 74-661.000.

Cannon, Lee E.; and Mansfield, Amos R., Jr., to Dana Corporation. Resolver interface for servo position control. 4,267,497, Cl. 318-661.000.

Canon Kabushiki Kaisha: *See—*
Shinoda, Nobuhiko; Ito, Tadashi; Ito, Fumio; Mashimo, Yukio; and Sakurada, Nobuaki, 4,267,437, Cl. 235-92.0PE.
Suzuki, Koji; and Shibata, Takehiko, 4,267,511, Cl. 324-458.000.

Canron Corporation: *See—*
Cox, Emmett W., 4,266,351, Cl. 37-104.000.
Newman, George R., 4,266,352, Cl. 37-105.000.
Newman, George R., 4,266,353, Cl. 37-105.000.

Carbone, Peter; and Spector, George. Flexible playing card display rack. 4,266,771, Cl. 273-150.000.

Carduck, Franz-Josef: *See—*
Christophliemk, Peter; Wust, Willi; and Carduck, Franz-Josef, 4,267,158, Cl. 423-329.000.

Carel, Alfred B.: *See—*
Cabbiness, Dale K.; Carel, Alfred B.; and Leslie, W. Dean, 4,267,445, Cl. 250-255.000.

Carl Freudenberg, Firma: *See—*
Scheibe, Joachim; and Kuhn, Helmut, 4,267,139, Cl. 264-229.000.

Carl Schenck AG: *See—*
Keller, Guenter; Pohl, Andreas; and Hintz, Gerhard, 4,266,467, Cl. 91-437.000.

Carl Zeiss, Inc.: *See—*
Geraci, James L., 4,266,663, Cl. 206-223.000.

Carl Zeiss-Stiftung: *See—*
Bruckner, Elmar; Gausmann, Hans; Schipper, Philipp; and Tausch, Walter, 4,267,149, Cl. 422-65.000.
Trotscher, Otto; and Wiedmann, Erwin, 4,266,862, Cl. 351-14.000.

Carlsen, Ove, to A/S Blehr & Tenvig. Stabilizer means for a surface vessel. 4,266,496, Cl. 114-126.000.

Carnus, Jean-Claude: *See—*
Perez, Jean; and Carnus, Jean-Claude, 4,266,524, Cl. 123-568.000.

Carrish, Jeffrey J.: *See—*
Fotland, Richard A.; and Carrish, Jeffrey J., 4,267,556, Cl. 346-153.100.

Carroll, Arthur B.; Lazarevich, Vladeta D.; and Gardner, Mark R., to Carroll Manufacturing Corporation. Photoelectric input apparatus. 4,267,443, Cl. 250-221.000.

Carroll Manufacturing Corporation: *See—*
Carroll, Arthur B.; Lazarevich, Vladeta D.; and Gardner, Mark R., 4,267,443, Cl. 250-221.000.

Carter, Cecil O., to Phillips Petroleum Company. Separating olefins from paraffins with dimethyl sulfoxide extractant. 4,267,034, Cl. 208-323.000.

Carter, Joseph F. Paint can attachment for holding brushes. 4,266,686, Cl. 220-90.000.

Carter, William R.; and Ellis, Larry G., to Western Gear Corporation. Airborne stores arming trigger unit. 4,266,462, Cl. 89-1.50D.

Casanova, Bernard A.: *See—*
Moyroud, Louis M.; Morgan, Grant T.; and Casanova, Bernard A., 4,266,864, Cl. 354-15.000.

Casares, Robert. Massaging device for backs. 4,266,536, Cl. 128-57.000.

Case, Barton C.: *See—*
Kroplinski, Thaddeus F.; and Case, Barton C., 4,267,044, Cl. 210-321.200.

Casio Computer Co., Ltd.: *See—*
Mizuno, Mamoru; and Tsuzuki, Hanzou, 4,267,587, Cl. 368-85.000.

Caterpillar Tractor Co.: *See—*
Dauwalder, Fred R., 4,266,318, Cl. 16-111.00R.
Fisher, George A.; and Mason, Gary E., 4,266,628, Cl. 180-54.00F.
Shuler, Lucien B., 4,266,626, Cl. 180-6.480.
Smith, Roger M., 4,266,798, Cl. 280-481.000.

Cavadias, Simeon: *See—*
Amouroux, Jacques; Rapakoulias, Demetre; and Cavadias, Simeon, 4,267,027, Cl. 204-179.000.

Cecil, James B., to National Semiconductor Corporation. Digital to analog conversion circuit including compensation FET'S. 4,267,550, Cl. 340-347.0DA.

Celanese Corporation: *See—*
Booth, Frank B., 4,267,383, Cl. 568-454.000.
Froix, Michael F., 4,267,289, Cl. 525-444.000.
Vanderspurt, Thomas H., 4,267,386, Cl. 568-480.000.

Celotex Corporation, The: *See—*
Barnhart, David A.; Britt, Ronald L.; Kroger, John E.; and Walters, David A., 4,266,528, Cl. 126-299.00D.
Flood, David N., 4,266,388, Cl. 52-748.000.

Central Glass Company, Limited: *See*—
Ozawa, Masahiro; Komatsu, Tadaaki; and Matsuoka, Kimiaki, 4,267,360, Cl. 560-111.000.
Ceraver: *See*—
Pargamin, Laurent, 4,267,403, Cl. 174-140.00S.
Ceskoslovenska akademie ved: *See*—
Sevcik, Stanislav; Trekoval, Jiri; Holata, Jan; and Stamberg, Jiri, 4,267,287, Cl. 525-271.000.
Chaikin, George M.; and Weiman, Carl F. R., to Old Dominion University Research Foundation. Image processing system. 4,267,573, Cl. 364-515.000.
Champion International Corporation: *See*—
Austin, John J., 4,266,716, Cl. 229-39.00R.
Roccaforte, Harry I., 4,266,671, Cl. 206-626.000.
Tellman, Stephen J., 4,266,382, Cl. 52-316.000.
Chance, Davey J.: *See*—
Bell, Oliver A., Jr.; Gilleland, Randall C.; and Chance, Davey J., 4,267,422, Cl. 219-69.00C.
Bell, Oliver A., Jr.; Gilleland, Randall C.; and Chance, Davey J., 4,267,423, Cl. 219-69.00S.
Chang, Pei K.; and Concilio-Nolan, Mary C., to Stauffer Chemical Company. Process for forming an egg white substitute. 4,267,100, Cl. 260-112.00R.
Chang, Shih-chih. Aeration method and apparatus. 4,267,052, Cl. 210-629.000.
Chelminski, Paul, to Bolt Associates, Inc. High strength submersible electrical cable and connector assembly. 4,266,844, Cl. 339-218.00M.
Chemisch-pharmazeutische Industrie KG, Apparatebau KG: *See*—
Schael, Wilfried, 4,267,041, Cl. 210-109.000.
Chemithon Corporation, The: *See*—
Brooks, Burton; and Brooks, Richard J., 4,267,119, Cl. 260-458.00R.
Chen, Catherine S. H.; Schmitt, Kirk D.; and Williams, Albert L., to Mobil Oil Corporation. Method of preparing propane sulfonates. 4,267,123, Cl. 260-501.120.
Chen, Chang C. Automatic trap for catching cockroach. 4,266,363, Cl. 43-73.000.
Chen, Schoen-nan; Russak, Michael A.; Witzke, Horst; Reichman, Joseph; and Deb, Satyendra K., to Grumman Aerospace; and Refac Electronics. Method of manufacturing photoelectrochemical cell. 4,266,338, Cl. 29-623.200.
Cheney, Alwyn H. Incompressible fluid type rock breaker. 4,266,827, Cl. 299-20.000.
Cherkofsky, Saul C., to Du Pont de Nemours, E. I., and Company. Antiinflammatory 4,5-diaryl-2-(substituted-thio)pyrroles and their corresponding sulfoxides and sulfones. 4,267,184, Cl. 424-263.000.
Cherkofsky, Saul C., to Du Pont de Nemours, E. I., and Company. Antiinflammatory 4,5-diaryl-α,α-bis(polyfluoromethyl)-1H-pyrrole-2-methanethiols. 4,267,190, Cl. 424-274.000.
Chernega, John G., to Minnesota Mining and Manufacturing Company. Flexible magnetic recording media lubricated with fluorinated telechelic polyether polymer. 4,267,238, Cl. 428-422.000.
Cherry, William D.; and Goldie, Harry, to Westinghouse Electric Corp. Iris for receiver protector. 4,267,530, Cl. 333-13.000.
Chevron Research Company: *See*—
Van Nordstrand, Robert A., 4,266,672, Cl. 208-120.000.
Chew, Remedios K.: *See*—
Pastor, Ricardo C.; Chew, Remedios K.; and Gorre, Luisa E., 4,267,205, Cl. 427-93.000.
Chicago Bridge & Iron Company: *See*—
Tam, William A., 4,266,499, Cl. 114-230.000.
Chimishkian, Alexandr L.: *See*—
Nefedov, Boris K.; Manov-Juvensky, Vladimir I.; Dergunov, Jury I.; Rysikhin, Anatoly I.; and Chimishkian, Alexandr L., 4,267,070, Cl. 252-429.00R.
Chinenov, Sergei P.: *See*—
Zuzanov, Georgy I.; Ignatov, Jury P.; and Chinenov, Sergei P., 4,266,894, Cl. 409-283.000.
Chitnis, Hema R.: *See*—
Chitnis, Raveendra V.; and Chitnis, Hema R., 4,266,775, Cl. 273-278.000.
Chitnis, Raveendra V.; and Chitnis, Hema R. Game involving the dealing in commodities. 4,266,775, Cl. 273-278.000.
Chou, Terry Y.: *See*—
Tsao, George T.; and Chou, Terry Y., 4,266,981, Cl. 127-37.000.
Christensen, Burton G.: *See*—
Cama, Lovji D.; and Christensen, Burton G., 4,267,188, Cl. 424-274.000.
Christensen, Inc.: *See*—
Brock, Kenneth A., 4,266,621, Cl. 175-329.000.
Christensen, Thorkild: *See*—
Baatrup, Johannes V.; Christensen, Thorkild; Christiansen, Tage; and Thomsen, Svend E., 4,266,464, Cl. 91-29.000.
Christenson, Philip A.: *See*—
Willis, Brian J.; Christenson, Philip A.; and Barton, Derek H. R., 4,267,111, Cl. 260-343.210.
Christian, John B.: *See*—
Tamborski, Christ; and Christian, John B., 4,267,348, Cl. 548-330.000.
Christiansen, Tage: *See*—
Baatrup, Johannes V.; Christensen, Thorkild; Christiansen, Tage; and Thomsen, Svend E., 4,266,464, Cl. 91-29.000.
Christophliemk, Peter; Wust, Willi; and Carduck, Franz-Josef, to Henkel Kommanditgesellschaft auf Aktien; and Deutsche Gold-und Silber-Scheideanstalt Vormals Roessler. Continuous process for the production of amorphouse sodium aluminosilicate. 4,267,158, Cl. 423-329.000.
Christou, Aristos: *See*—
Davey, John E.; Christou, Aristos; and Dietrich, Harry B., 4,267,014, Cl. 156-662.000.
Christy Concrete Products, Inc.: *See*—
Samolis, Alfonso A., 4,266,380, Cl. 52-19.000.
Chubb Industries Ltd.: *See*—
Markham, Michael H., 4,266,488, Cl. 109-59.00R.
Chudo, Akira; Sugi, Tomomitsu; and Kataoka, Kouji, to Osaka Cement Co., Ltd. Expansive solidifying material. 4,266,980, Cl. 106-97.000.
Ciba-Geigy Corporation: *See*—
Grieder, Alfred; Coers, Klaus-Jurgen; and Labuhn, Peter, 4,267,356, Cl. 560-43.000.
Guglielmetti, Leonardo, 4,267,343, Cl. 548-220.000.
Hildreth, John D.; Tschopp, Anton F.; and Evans, David G., 4,266,939, Cl. 8-437.000.
Mueller, Karl F., 4,267,087, Cl. 260-29.2EP.
Petree, Harris E.; Pociask, Joseph R.; and Gupton, John T., 4,267,347, Cl. 548-262.000.
Ciboit, Jacques J.; and Laguilharre, Pierre R. Process for cooling hot concentrated milk coming from an evaporator, by expansion by stages. 4,267,015, Cl. 159-47.00R.
Cieciuch, Ronald F.: *See*—
Locatell, Louis, Jr.; Zepp, Charles M.; and Cieciuch, Ronald F., 4,267,251, Cl. 430-224.000.
Cimarusti, Christopher M.: *See*—
Hauck, Frederic P.; Cimarusti, Christopher M.; and Sundeen, Joseph E., 4,267,373, Cl. 564-428.000.
Cincinnati Electronics Corporation: *See*—
Wissel, F. A.; and Kiliman, D. A., 4,267,591, Cl. 370-11.000.
Cisneros, Ignacio L.: *See*—
Behrendt, Bruce O.; Cisneros, Ignacio L.; Stephenson, Ronald B.; and Stephenson, Donald R., 4,266,531, Cl. 126-449.000.
Citizen Watch Co., Ltd.: *See*—
Kato, Toshitake, 4,267,479, Cl. 310-348.000.
Nomura, Hiroki; Mafune, Masao; and Koyanagi, Masaru, 4,267,427, Cl. 219-121.0LL.
Togashi, Seigo, 4,266,859, Cl. 350-338.000.
Uchino, Misao; and Watanabe, Minoru, 4,267,586, Cl. 368-73.000.
CIVAG AG Institut fur Verpackungsforschung: *See*—
Weidner, Richard; and Hahn, Ortwin, 4,266,928, Cl. 425-584.000.
Claas OGH, The: *See*—
Ziems, Horst, 4,266,466, Cl. 91-420.000.
Claassens, Antonius P. J. A., to U.S. Philips Corporation. Hair trimming apparatus. 4,266,341, Cl. 30-195.000.
Clark Equipment Company: *See*—
Fassett, Nyle W., 4,266,808, Cl. 280-756.000.
Clark, Graeme M.: *See*—
Forster, Ian C.; Patrick, James F.; Tong, Yit C.; Black, Raymond C.; and Clark, Graeme M., 4,267,410, Cl. 179-107.0BC.
Clark, James A., to Bausch & Lomb Incorporated. Sealed container having a deformable elongate member in the seal area. 4,266,692, Cl. 222-94.000.
Clark, James R. Rope securing device. 4,266,498, Cl. 114-218.000.
Clarke, Walter W. H. Pneumatic door locks. 4,266,415, Cl. 70-264.000.
Clayton, John P.: *See*—
Luk, Kong; Clayton, John P.; and Rogers, Norman H., 4,267,316, Cl. 542-427.000.
Clemson University: *See*—
Park, Joon B., 4,266,303, Cl. 3-1.910.
Clouth Gummiwerke Aktiengesellschaft: *See*—
Ortwein, Hermann; and Braitsch, Hans, 4,266,719, Cl. 238-283.000.
Coal Industry (Patents) Limited: *See*—
Parfitt, Norman L. C., 4,266,637, Cl. 188-196.00P.
Coburn, C. David; and Maloy, Rex M., to Coburn, Orin W. Coin release assembly. 4,266,564, Cl. 133-5.00R.
Coburn, Orin W.: *See*—
Coburn, C. David; and Maloy, Rex M., 4,266,564, Cl. 133-5.00R.
Cochran, Clifford E. Lightweight golf bag. 4,266,589, Cl. 150-1.50B.
Coers, Klaus-Jurgen: *See*—
Grieder, Alfred; Coers, Klaus-Jurgen; and Labuhn, Peter, 4,267,356, Cl. 560-43.000.
Coetzer, Johan; and Thackeray, Michael M., to South African Inventions Development Corp. Electrochemical cell. 4,267,242, Cl. 429-104.000.
Cohen, Louis, to B. F. Goodrich Company, The. Solvent polymerization of carboxyl containing monomers. 4,267,103, Cl. 260-17.4UC.
Cohn, Nathan, to Network Systems Development Associates. Energy conservation by improved control of bulk power transfers on interconnected systems. 4,267,571, Cl. 364-493.000.
Collette, Wayne N.; Krishnakumar, Suppayan M.; and Mahajan, Gautam K., to Continental Group, Inc., The. Process of reducing blowing cycle for blow molded containers. 4,267,144, Cl. 264-523.000.
Collins, Andrew P. Recreational basketball apparatus with moving backboards. 4,266,763, Cl. 272-3.000.
Collins, Andrew P. Recreational basketball apparatus with moving goal. 4,266,764, Cl. 272-3.000.
Collins, Ellsworth H.: *See*—
Meyer, Louis H.; and Collins, Ellsworth H., 4,266,659, Cl. 198-781.000.
Collonia, Harald, to VDO Adolf Schindling AG. Electrical regulating device for speed control devices. 4,267,491, Cl. 318-311.000.
Colt Industries Operating Corp: *See*—
Bell, Oliver A., Jr.; Gilleland, Randall C.; and Chance, Davey J., 4,267,422, Cl. 219-69.00C.

Bell, Oliver A., Jr.; Gilleland, Randall C.; and Chance, Davey J., 4,267,423, Cl. 219-69.00S.
Comaco, Inc.: *See—*
Godbersen, Harold W., 4,266,917, Cl. 425-64.000.
Comberg, Gerd: *See—*
Bornefeld, Horst; Comberg, Gerd; Engel, Werner; and Neyer, Johannes, 4,266,373, Cl. 51-99.000.
Communications Satellite Corporation: *See—*
Assal, Francois T.; Berman, Arnold L.; and Betaharon, Khodadad, 4,267,538, Cl. 333-262.000.
Karmel, Paul R., 4,267,537, Cl. 333-231.000.
Concilio-Nolan, Mary C.: *See—*
Chang, Pei K.; and Concilio-Nolan, Mary C., 4,267,100, Cl. 260-112.00R.
Cone-Blanchard Machine Company: *See—*
Wilterdink, Bernard W., 4,267,495, Cl. 318-571.000.
Conoco, Inc.: *See—*
Cabbiness, Dale K.; Carel, Alfred B.; and Leslie, W. Dean, 4,267,445, Cl. 250-255.000.
Ziegenhain, William C., 4,267,161, Cl. 423-462.000.
Conrad, Jens: *See—*
Schaper, Ulf-Armin; Conrad, Jens; and Bruns, Klaus, 4,267,075, Cl. 252-522.00R.
Conte, Laurino. Securement of couplings to lengths of hose. 4,266,330, Cl. 29-267.000.
Contemporary, Inc.: *See—*
Kanzelberger, James C., 4,267,224, Cl. 428-216.000.
Continental Group, Inc., The: *See—*
Collette, Wayne N.; Krishnakumar, Suppayan M.; and Mahajan, Gautam K., 4,267,144, Cl. 264-523.000.
Reid, Jeremy T., 4,266,688, Cl. 220-273.000.
Convertini, Ursula; Dimingen, Heinz; Luthje, Holger; Kuch, Friedrich; and Tummoscheit, Peter, to U.S. Philips Corporation. Integrated thin layer magnetic field sensor. 4,267,510, Cl. 324-249.000.
Conway, Richard A.; and Nelson, Robert F., to Union Carbide Corporation. High solubility gas flotation in liquid-solid separation. 4,267,050, Cl. 210-608.000.
Cook, Edward J.: *See—*
Barabino, William A.; and Cook, Edward J., 4,266,633, Cl. 188-1.00A.
Cooper Care, Inc.: *See—*
Weitzman, Stewart; and Archibald, Roy D., 4,267,167, Cl. 424-52.000.
Corder, Paul R., to Brown & Root, Inc. Self-elevating fixed platform. 4,266,887, Cl. 405-196.000.
Corning Glass Works: *See—*
Dix, James F.; Ford, Clarence E., Jr.; Forker, Ray B., Jr.; and Johnson, Ronald E., 4,267,000, Cl. 156-235.000.
Sullivan, Kevin J., 4,266,941, Cl. 23-230.00B.
Cors, Bernard E., deceased; and Cors, Bette M., executrix. Supporting assembly for an alignment line. 4,266,342, Cl. 33-1.00Q.
Cors, Bette M., executrix: *See—*
Cors, Bernard E., deceased; and Cors, Bette M., executrix, 4,266,342, Cl. 33-1.00Q.
Coulter Systems Corporation: *See—*
Kuehnle, Manfred R.; Cox, Richard E.; Harris, George B., Jr.; Forrest, Jess; and Hardy, Carl D., 4,266,869, Cl. 355-8.000.
Courtaulds Limited: *See—*
Laszlo, Akos; and Merriman, Horace B., 4,266,983, Cl. 134-21.000.
Cox, Emmett W., to Canron Corporation. Center plow for railroad ballast. 4,266,351, Cl. 37-104.000.
Cox, Richard E.: *See—*
Kuehnle, Manfred R.; Cox, Richard E.; Harris, George B., Jr.; Forrest, Jess; and Hardy, Carl D., 4,266,869, Cl. 355-8.000.
Cozzi, Paolo; Magni, Osvaldo; Bertone, Leone; Angelucci, Romano; and Lovisolo, Pier P., to Farmitalia Carlo Erba S.p.A. 2-Hydroxymethyl-pyrazine derivatives and process for their preparation. 4,267,327, Cl. 544-336.000.
CPC International Inc.: *See—*
Ledding, Willard E., 4,266,348, Cl. 34-10.000.
CPS Industries: *See—*
Stone, Arnold F.; and Kinnard, William D., 4,267,228, Cl. 428-297.000.
Cragoe, Edward J., Jr.: *See—*
Rokach, Joshua; Rooney, Clarence S.; and Cragoe, Edward J., Jr., 4,267,341, Cl. 548-206.000.
Craiglow, Robert L., to Rockwell International Corporation. Anti-jam radio. 4,267,592, Cl. 370-29.000.
Crane Co.: *See—*
Crits, George J., 4,267,159, Cl. 423-371.000.
Crane, Walton B., to Industrial Designs & Services. Boxes with column-forming inserts. 4,266,714, Cl. 229-34.0HW.
Crawford, Andrew B., Jr.; and Wade, Gerald J., to Honeywell Inc. Medical specimen culture bottle. 4,267,276, Cl. 435-291.000.
Creative Tool Company: *See—*
Wesley, William M., 4,266,427, Cl. 73-119.00A.
Crist, Robert M. Oil filter wrench. 4,266,452, Cl. 81-121.00R.
Critelli, Frank W. Waterbed foundation construction. 4,266,307, Cl. 5-451.000.
Crits, George J., to Crane Co. Cyanide recovery. 4,267,159, Cl. 423-371.000.
Crooks, James W., to Wallace-Murray Corporation. Fluid shear coupling. 4,266,645, Cl. 192-58.00B.
Crosby, Guy A.: *See—*
DuBois, Grant E.; Stephenson, Rebecca A. G.; and Crosby, Guy A., 4,267,165, Cl. 424-48.000.
Cross, David E., to Smiths Industries Limited. Connectors. 4,266,815, Cl. 285-330.000.
Crown Controls Corporation: *See—*
Bergman, Lawrence J., 4,266,744, Cl. 248-49.000.
CSELT, Centro Studi e Laboratori Telecomunicazioni S.P.A.: *See—*
Bosotti, Luciano, 4,267,590, Cl. 370-3.000.
CTS Corporation: *See—*
Holmes, Curtis L.; Faber, William M., Sr.; Francis, Gaylord L.; and Boykin, Otis F., 4,267,074, Cl. 252-514.000.
Cuccolo, Sergio: *See—*
Sachetto, Jean-Pierre; Regnault, Alain; Cuccolo, Sergio; Tournier, Herve; and Armanet, Jean-Michel, 4,267,314, Cl. 536-53.000.
Cummings, Charles A.; and Rodmaker, Gerald, to C.P.G. Products Corp. Ringing toy telephone. 4,266,365, Cl. 46-33.000.
Cummings, Donald R., to Dut Pty Limited. Simultaneous cooling and removal of water from hydrocarbon gas mixtures. 4,266,958, Cl. 62-20.000.
Cummings, Robert, to U.S. Clinical Products, Inc. Sealing cover and method for resealing an intravenous container. 4,266,687, Cl. 220-257.000.
Curnes, John J. Means of support for the rollers of a press. 4,266,923, Cl. 425-356.000.
Curten, Jean L.: *See—*
Sandoval, Narciso; and Curten, Jean L., 4,266,765, Cl. 272-70.300.
Curtis, Harold D. Portable auxiliary cooling tower. 4,267,130, Cl. 261-112.000.
Cuscurida, Michael; and Speranza, George P., to Texaco Development Corp. Polyester polycarbonates. 4,267,120, Cl. 260-463.000.
Czerepinski, Ralph G.: *See—*
Garrett, Walter L.; and Czerepinski, Ralph G., 4,266,481, Cl. 101-456.000.
Czuba, Leonard F.: *See—*
Becker, Lawrence F.; Czuba, Leonard F.; and Laurin, Dean G., 4,266,542, Cl. 128-214.00R.
Dabbs, Joseph C.: *See—*
Dauerman, Leonard; Rao, Krishna K.; Dabbs, Joseph C.; and Delaney, Brian, 4,267,156, Cl. 423-242.000.
Daenen, Robert H. C. M., to Dart Industries Inc. Luggage marker. 4,266,354, Cl. 40-21.00R.
Dague, Harold F., to Pic Disc, Inc. Method for making picture records. 4,267,001, Cl. 156-245.000.
Dahlstrom, Kenneth J.: *See—*
Barnard, Walter C.; and Dahlstrom, Kenneth J., 4,266,837, Cl. 312-351.000.
Dai Nippon Insatsu Kabushiki Kaisha: *See—*
Mitsuhashi, Yuuji, 4,266,872, Cl. 356-51.000.
Daicel Ltd.: *See—*
Sato, Kazuo; Asahi, Akira; and Koyama, Takahiro, 4,267,198, Cl. 426-332.000.
Daido Kogyo Co., Ltd.: *See—*
Imamura, Kazuo; and Minamoto, Toshio, 4,266,417, Cl. 72-168.000.
Daiello, Cosimo D.: *See—*
Rick, Randy L.; Mazzotta, Paul F.; and Daiello, Cosimo D., 4,267,431, Cl. 219-225.000.
Daikin Kogyo Co., Ltd.: *See—*
Ohmori, Akira, 4,267,302, Cl. 528-103.000.
Daimler-Benz Aktiengesellschaft: *See—*
Happel, Robert; and Haepp, Hans J., 4,266,727, Cl. 239-409.000.
Dainichiseika Color & Chemicals Mfg. Co. Ltd.: *See—*
Sannan, Takanori; and Horiguchi, Shojiro, 4,267,313, Cl. 536-18.000.
Daldrup, Heinz G.; Nothhelfer, Gunther; Franke, Friedrich H.; and Limpach, Raymond, to Rheinische Braunkohlenwerke A.G.; and Arbed S.A. Process for injecting brown coal into a blast furnace. 4,266,968, Cl. 75-42.000.
Dalton, Thomas P. Portable swivel hunter's stool. 4,266,748, Cl. 248-425.000.
Daly, Geoffrey J., to Brambles Holdings Limited. Nesting units. 4,266,678, Cl. 211-194.000.
Dana Corporation: *See—*
Cannon, Lee E.; and Mansfield, Amos R., Jr., 4,267,497, Cl. 318-661.000.
Kessmar, Leo R., 4,266,438, Cl. 74-473.00R.
Danfoss A/S: *See—*
Baatrup, Johannes V.; Christensen, Thorkild; Christiansen, Tage; and Thomsen, Svend E., 4,266,464, Cl. 91-29.000.
Daniels, Alexander. Hourglass construction. 4,267,588, Cl. 368-93.000.
Danielsson, Joel L.: *See—*
Nilsson, Dan L.; and Danielsson, Joel L., 4,266,630, Cl. 180-291.000.
Dankman, Scott; Levy, Richard C.; and McCoy, Bryan L. Multi-mode doll. 4,267,551, Cl. 340-384.00E.
Danzin, Charles: *See—*
Metcalf, Brian W.; Jung, Michel; and Danzin, Charles, 4,267,374, Cl. 564-509.000.
Darkes, Paul R.; Campbell, Henry F.; and Douglas, George H., to William H. Rorer, Inc. Process for producing ethynylbenzenes. 4,267,388, Cl. 568-642.000.
Dart Industries Inc.: *See—*
Daenen, Robert H. C. M., 4,266,354, Cl. 40-21.00R.
Datafile Limited: *See—*
Anderson, Dale L., 4,267,004, Cl. 156-361.000.
Dauerman, Leonard; Rao, Krishna K.; Dabbs, Joseph C.; and Delaney, Brian, to Foundation at New Jersey Institute of Technology, The. Method using lime slurry for regenerating sodium sulfite in double alkali flue gas desulfurization process. 4,267,156, Cl. 423-242.000.

Dauwalder, Fred R., to Caterpillar Tractor Co. Hand rail assembly. 4,266,318, Cl. 16-111.00R.
Davey, John E.; Christou, Aristos; and Dietrich, Harry B., to United States of America, Navy. Semiconductor encapsulant for annealing ion-implanted GaAs. 4,267,014, Cl. 156-662.000.
Davi, S. K. Apparatus for and method of utilizing energy to excise pathological tissue. 4,266,548, Cl. 128-303.100.
Davidson, Raymond J.; and Veronese, Vittorio. Regeneration of activated carbon to increase its gold adsorption capacity. 4,267,069, Cl. 252-412.000.
Davis, James A.; and Koch, Robert C., to Firestone Tire & Rubber Company, The. Cured rubber skim compositions exhibiting better humidity aged metal adhesion and metal adhesion retention. 4,267,079, Cl. 260-3.500.
Davis, Thomas G.; and Weaver, Max A., to Eastman Kodak Company. Polyester polymers containing residues of anthroquinone dyes. 4,267,306, Cl. 528-226.000.
Davis, William W., to Sperry Corporation. Gain controllable amplifier stage. 4,267,518, Cl. 330-254.000.
Day, James L.: *See*—
Whaley, Robert L.; and Day, James L., 4,266,820, Cl. 296-35.300.
Dayco Corporation: *See*—
Deiss, Richard, 4,266,579, Cl. 138-127.000.
Deb, Satyendra K.: *See*—
Chen, Schoen-nan; Russak, Michael A.; Witzke, Horst; Reichman, Joseph; and Deb, Satyendra K., 4,266,338, Cl. 29-623.200.
Debenham, Colin H.: *See*—
Mesch, Hans G.; Debenham, Colin H.; and Yasui, Robert K., 4,267,003, Cl. 156-356.000.
Dechant, Thomas E.; Glaser, Edward L.; Pitt, Paul E.; and Way, Frederick, to System Development Corporation. Information storage and retrieval system. 4,267,568, Cl. 364-200.000.
Dedding, Nicolaas P.: *See*—
Kieboom, Arnoldus M. C.; and Dedding, Nicolaas P., 4,267,453, Cl. 250-368.000.
Deere & Company: *See*—
Roesner, Keith G., 4,266,504, Cl. 118-663.000.
De Felice, Stephen L., to Biocarn Limited. Carnitine and its use in reducing cardiac toxicity. 4,267,163, Cl. 424-9.000.
Degen, Hans-Juergen, to BASF Aktiengesellschaft. Colored polymeric compounds. 4,267,319, Cl. 542-434.000.
Deiss, Richard, to Dayco Corporation. Hose and method of making same. 4,266,579, Cl. 138-127.000.
Delaney, Brian: *See*—
Dauerman, Leonard; Rao, Krishna K.; Dabbs, Joseph C.; and Delaney, Brian, 4,267,156, Cl. 423-242.000.
Delaunay, Antoine; and Ecolasse, Guy, to Boyer, Michel. Vehicle wheel anti-slip device. 4,266,832, Cl. 301-48.000.
Dell'Ara, Michael E.: *See*—
Ramos, Gary A.; and Dell'Ara, Michael E., 4,266,740, Cl. 242-86.520.
Deller, Robert J., to Pullman Incorporated. Extruded nonskid treadway. 4,266,381, Cl. 52-177.000.
DeLuca, Patrick P.; and Butler, L. David, to University of Kentucky Research Foundation, The. Testing the integrity of liquid containing hermetically sealed containers by the use of radioactive markers. 4,267,449, Cl. 250-303.000.
del Valle, Clara J., to Dow Chemical Company, The. Resin composition. 4,267,095, Cl. 260-40.00R.
Demmer, Manfred: *See*—
Boddenberg, Klaus; Waldmann, Jurgen; and Demmer, Manfred, 4,267,216, Cl. 427-397.800.
Dempsey, Martin E.; and Lee, Ching W., to GTE Laboratories Incorporated. Acoustic surface wave device. 4,267,533, Cl. 333-151.000.
de Neufville, John P.: *See*—
Hallman, Robert W.; Ovshinsky, Stanford R.; and de Neufville, John P., 4,267,261, Cl. 430-322.000.
Denki Onkyo Co., Ltd.: *See*—
Narikiyo, Tatsuichi, 4,267,541, Cl. 335-212.000.
Dennison Manufacturing Company: *See*—
Fotland, Richard A.; and Carrish, Jeffrey J., 4,267,556, Cl. 346-153.100.
de Nora, Vittorio; Nidola, Antonio; Spaziante, Placido M.; and Bianchi, Giuseppe, to Diamond Shamrock Technologies, S.A. Electrodes for electrolytic processes, especially perchlorate production. 4,267,025, Cl. 204-82.000.
Dentan Co., Ltd.: *See*—
Sugiyama, Kazuo, 4,267,547, Cl. 340-65.000.
Denzer, Ronald W. Vehicle mounted log splitter. 4,266,585, Cl. 144-193.00A.
Deprez, Jacques: *See*—
Breuer, Wolfram; Becker, Wolf-Jurgen; Deprez, Jacques; Drope, Eckard; Kaufmann, Karl-Heinz; and Schreckling, Kurt, 4,267,030, Cl. 204-278.000.
Derewonko, Henri; Laviron, Michel; and Lepage, Joel, to Thomson-CSF. Hybrid component for very high frequency amplification. 4,267,520, Cl. 330-286.000.
Dergunov, Jury I.: *See*—
Nefedov, Boris K.; Manov-Juvensky, Vladimir I.; Dergunov, Jury I.; Rysikhin, Anatoly I.; and Chimishkian, Alexandr L., 4,267,070, Cl. 252-429.00R.
Desai, Nitin V.: *See*—
Poliniak, Eugene S.; and Desai, Nitin V., 4,267,257, Cl. 430-270.000.
Desmond, Michael N.: *See*—
Rothenberg, Alan S.; and Desmond, Michael N., 4,267,372, Cl. 564-205.000.
Desmoulins, Jean C.: *See*—
Boudet, Georges; and Desmoulins, Jean C., 4,266,451, Cl. 81-57.350.
Detrick, Jeffrey C. Fastener extracting apparatus. 4,266,755, Cl. 254-18.000.
Deutsche Gold-und Silber-Scheideanstalt Vormals Roessler: *See*—
Christophliemk, Peter; Wust, Willi; and Carduck, Franz-Josef, 4,267,158, Cl. 423-329.000.
Dewsnap, Paul D., to Donaldson Display Company, Inc. Samples clamp. 4,266,677, Cl. 211-45.000.
Dezawa, Shinichiro: *See*—
Sasazawa, Koji; Kitamoto, Tatsuji; Akashi, Goro; Masaki, Kouichi; and Dezawa, Shinichiro, 4,267,207, Cl. 427-129.000.
Dhein, Rolf; Poetter, Gerswid; and Rudolph, Hans, to Bayer Aktiengesellschaft. Air-cross-linkable polyacrylate lacquer binders containing chemically fixed wood preservatives. 4,267,082, Cl. 260-23.0AR.
Diamond Shamrock Corporation: *See*—
Higashiyama, Takao; and Nishikawa, Toshio, 4,266,975, Cl. 106-1.120.
Diamond Shamrock Technologies, S.A.: *See*—
de Nora, Vittorio; Nidola, Antonio; Spaziante, Placido M.; and Bianchi, Giuseppe, 4,267,025, Cl. 204-82.000.
Diaz-Nogueira, Eduardo: *See*—
Redondo-Abad, Angel L.; Diaz-Nogueira, Eduardo; Gerez-Pascual, Martin; and Regife-Vega, Jose M., 4,266,972, Cl. 75-101.00R.
Dickinson, David G. Magnetic drive laboratory pump. 4,266,914, Cl. 417-63.000.
Dickson, Leon L.; and Ellison, Bart T., to Shell Oil Company. Corrosion monitoring and testing system. 4,267,148, Cl. 422-53.000.
Dielectric Systems International, Inc.: *See*—
Kalt, Charles G., 4,266,339, Cl. 29-829.000.
Diesel Kiki Co., Ltd.: *See*—
Nomura, Hiroshi, 4,266,913, Cl. 417-269.000.
Sumikawa, Seiji; Niizuma, Hiroshi; Tonegawa, Hiromichi; Torizuka, Tsuneo; Furuya, Yoichiro; and Takashima, Norio, 4,266,604, Cl. 165-176.000.
Diessel, Paul; Perner, Johannes; Leutner, Bernd; and Schlimper, Hans-Ulrich, to BASF Aktiengesellschaft. Storage-stable, pourable silicate suspensions. 4,267,068, Cl. 252-179.000.
Dietrich, Harry B.: *See*—
Davey, John E.; Christou, Aristos; and Dietrich, Harry B., 4,267,014, Cl. 156-662.000.
DiGiacomo, Peter M.: *See*—
Parziale, Victor E.; Dines, Martin B.; and DiGiacomo, Peter M., 4,267,308, Cl. 528-395.000.
Dillon, Benny N.: *See*—
Nordstrom, Kjell H.; Dillon, Benny N.; and Susor, William C., 4,266,624, Cl. 177-253.000.
Dillon, Robert F., Jr.; Hall, James J.; and Zamfirescu, Leon N., to Zerox Corporation. Transmission line active coaxial tap. 4,266,842, Cl. 339-97.00P.
Dimingen, Heinz: *See*—
Convertini, Ursula; Dimingen, Heinz; Luthje, Holger; Kuch, Friedrich; and Tummoscheit, Peter, 4,267,510, Cl. 324-249.000.
Dines, Martin B.: *See*—
Parziale, Victor E.; Dines, Martin B.; and DiGiacomo, Peter M., 4,267,308, Cl. 528-395.000.
DiPalma, Hugo R.; and Aubarede, Francis C., to DiPalma, Hugo R. Mobile spraying apparatus with an axial pipe-carrier drum. 4,266,724, Cl. 239-195.000.
Divers, Edward F., to United States of America, Interior. Combined rotating bed scrubber and water eliminator. 4,266,829, Cl. 299-64.000.
Dix, James F.; Ford, Clarence E., Jr.; Forker, Ray B., Jr.; and Johnson, Ronald E., to Corning Glass Works. Method for masking glass, glass-ceramic and ceramic surfaces. 4,267,000, Cl. 156-235.000.
Dixon, Frank O. Loading and unloading system for tank car trains. 4,266,580, Cl. 141-35.000.
Dixon, Roy P.; and Kelly, John F. Packaging for safety razors. 4,266,664, Cl. 206-349.000.
Dobbers, Jurgen: *See*—
Kyri, Hans; and Dobbers, Jurgen, 4,267,058, Cl. 210-716.000.
Dobo, Janos; Takacs, Erzsebet; Hortobagyi, Gyozo; Skvorecz nee Hajnoczy, Marianne; Kolbe, Ilona; and Hoffmann nee Vas, Katalin, to Richter Gedeon Vegyeszeti Gyar Rt. Coating ensuring a controlled release of active ingredients of biologically active compositions, particularly pharmaceutical compositions and a process for preparation of biologically active compositions ensuring controlled release of active ingredients. 4,267,138, Cl. 264-117.000.
Dr. Beck & Co. Aktiengesellschaft: *See*—
Schmidt, Karl; Hansch, Ferdinand; Rombrecht, Hans-Malte; and Beck, Hans-Joachim, 4,267,232, Cl. 428-379.000.
Dr. Edward Fresenuis, Chemischpharmazeutische Industrie KG, Apparatebau KG: *See*—
Schal, Wilfried, 4,267,040, Cl. 210-104.000.
Dodge, Dennis; Matwey, Paul; Madigan, Thomas M.; and Powers, Robert H., to Itek Corporation. Diffusion transfer camera processor. 4,266,866, Cl. 354-84.000.
Dodt, Jurgen: *See*—
Plevak, Lubomir; and Dodt, Jurgen, 4,266,891, Cl. 405-291.000.
Doherty, Charles J.: *See*—
Benton, Janet L.; Doherty, Charles J.; Kimerling, Lionel C.; and Leamy, Harry J., 4,266,986, Cl. 148-1.500.
Dolphin, David H.: *See*—
Van Winckel, Carl E.; Dolphin, David H.; Dumitrescu, Elena; and Van Winckel, Kent F., 4,267,378, Cl. 568-376.000.

Donaldson Display Company, Inc.: *See—*
Dewsnap, Paul D., 4,266,677, Cl. 211-45.000.
Donmez, Atilla; and Igel, Wolfgang, to Zinser Textilmaschinen. Method and apparatus for restarting individual winding units of a ring spinning or twisting frame. 4,266,397, Cl. 57-261.000.
Doss, Richard C.: *See—*
Louthan, Rector P.; and Doss, Richard C., 4,267,307, Cl. 528-293.000.
Douglas, George H.: *See—*
Darkes, Paul R.; Campbell, Henry F.; and Douglas, George H., 4,267,388, Cl. 568-642.000.
Dow Chemical Company, The: *See—*
del Valle, Clara J., 4,267,095, Cl. 260-40.00R.
Garrett, Walter L.; and Czerepinski, Ralph G., 4,266,481, Cl. 101-456.000.
Holmsen, Theodore W.; Kurihara, Norman H.; and Thomas, Paul A., 4,266,964, Cl. 71-94.000.
Tomalia, Donald A.; and Buchholz, Fredric L., 4,267,350, Cl. 548-354.000.
Dow Corning Corporation: *See—*
Homan, Gary R., 4,267,296, Cl. 528-15.000.
Downey, John H. Dual-voltage electric hair curling apparatus and vanity case therefore. 4,267,430, Cl. 219-222.000.
Doyle, Terrence W.: *See—*
Kaneko, Takushi; Essery, John M.; Schmitz, Henry; and Doyle, Terrence W., 4,267,113, Cl. 260-345.200.
Draber, Wilfried: *See—*
Knops, Hans-Joachim; Heine, Hans-Georg; Draber, Wilfried; and Brandes, Wilhelm, 4,267,186, Cl. 424-272.000.
Stetter, Jorg; Draber, Wilfried; Thomas, Rudolf; and Lunkenheimer, Winfried, 4,267,338, Cl. 548-143.000.
Draper, Richard W., to Schering Corporation. Use of 6β-fluoro-7α-halogenocorticoids as topical anti-inflammatories and pharmaceutical formulations useful therefor. 4,267,173, Cl. 424-243.000.
Driscoll, Michael M.; and Lisle, Thomas K., Jr., to United States of America, Air Force. Impulse generator apparatus. 4,267,513, Cl. 328-60.000.
Drone, Gary A.; and Rockwell, Harvey W., to Fiat-Allis Construction Machinery, Inc. Hydraulic vehicle performance sensor and shift point indicator. 4,267,545, Cl. 340-52.00R.
Drope, Eckard: *See—*
Breuer, Wolfram; Becker, Wolf-Jurgen; Deprez, Jacques; Drope, Eckard; Kaufmann, Karl-Heinz; and Schreckling, Kurt, 4,267,030, Cl. 204-278.000.
DuBois, Grant E.; Stephenson, Rebecca A. G.; and Crosby, Guy A., to Dynapol. Comestibles sweetened with alpha amino acid dihydrochalcones. 4,267,165, Cl. 424-48.000.
Duda, John. Vacuum cleaning apparatus. 4,266,317, Cl. 15-322.000.
Dulog, Lothar G.: *See—*
Maasbol, Alfred G.; and Dulog, Lothar G., 4,267,375, Cl. 568-57.000.
Dumitrescu, Elena: *See—*
Van Winckel, Carl E.; Dolphin, David H.; Dumitrescu, Elena; and Van Winckel, Kent F., 4,267,378, Cl. 568-376.000.
Dunnington, Gordon B.; and Manwiller, Carl H., to Du Pont de Nemours, E. I., and Company. Ram-extrusion apparatus for non-melt fabricable polymeric resins. 4,266,919, Cl. 425-102.000.
Dunweg, Gustav: *See—*
Henne, Werner; Dunweg, Gustav; Schmitz, Werner; Pohle, Raimund; and Lawitzki, Friedrich, 4,267,047, Cl. 210-490.000.
Duperray, Gilbert; Monnet, Andre A.; and Tournut, Claude, to Produits Chimiques Ugine Kuhlmann. Molded preformed polytetrafluoroethylene structures. 4,267,237, Cl. 428-422.000.
Du Pont de Nemours, E. I., and Company: *See—*
Aikens, Paul W., 4,266,839, Cl. 339-75.0MP.
Burkhart, Dean C.; Harper, Lee R.; and Sommerfeld, Eugene G., 4,267,288, Cl. 525-438.000.
Cherkofsky, Saul C., 4,267,184, Cl. 424-263.000.
Cherkofsky, Saul C., 4,267,190, Cl. 424-274.000.
Dunnington, Gordon B.; and Manwiller, Carl H., 4,266,919, Cl. 425-102.000.
Finizio, Michael, 4,267,185, Cl. 424-267.000.
Grot, Walther G.; Molnar, Charles J.; and Resnick, Paul R., 4,267,364, Cl. 560-183.000.
Kutsch, Howard J., 4,266,409, Cl. 64-12.000.
Segrott, Leslie, 4,266,838, Cl. 339-17.00C.
Wysong, Robert D., 4,267,145, Cl. 264-563.000.
Durlach, Jean P., to Les Laboratories Meram. Calcium derivatives of taurine having reinforced neuro-muscular activity. 4,267,194, Cl. 424-315.000.
Dursch, Walter; and Kleiner, Hans-Jerg, to Hoechst Aktiengesellschaft. Process for the manufacture of phosphinic and phosphonic acid anhydrides. 4,267,125, Cl. 260-545.00P.
Duskin Franchise Co., Ltd.: *See—*
Yagi, Akira; Miyoshi, Ichiro; and Nogami, Nobusue, 4,267,220, Cl. 428-96.000.
Dusza, John: *See—*
Baker, Pamela K.; Asato, Goro; and Dusza, John, 4,267,191, Cl. 424-285.000.
Dut Pty Limited: *See—*
Cummings, Donald R., 4,266,958, Cl. 62-20.000.
Dutcher, Robert G.; and O'Neill, Edward G., to Medtronic, Inc. Lead anchoring bobbin. 4,266,552, Cl. 128-419.00P.
Dynamit Nobel Aktiengesellschaft: *See—*
Hanisch, Horst; Rodder, Karl-Martin; Buning, Robert; and Hass, Hans-Jurgen, 4,267,093, Cl. 260-29.60H.
Dynapac Maskin AB: *See—*
Tuneblom, Eskil, 4,266,884, Cl. 404-122.000.
Dynapol: *See—*
DuBois, Grant E.; Stephenson, Rebecca A. G.; and Crosby, Guy A., 4,267,165, Cl. 424-48.000.
E.C. Chemical Ind. Co., Ltd.: *See—*
Uchiyama, Hiroshi, 4,267,110, Cl. 260-340.700.
E. R. Squibb & Sons, Inc.: *See—*
Hauck, Frederic P.; Cimarusti, Christopher M.; and Sundeen, Joseph E., 4,267,373, Cl. 564-428.000.
Krapcho, John; and Turk, Chester F., 4,267,354, Cl. 560-39.000.
Eastern Container Corporation: *See—*
Owens, James J., 4,267,008, Cl. 156-462.000.
Eastman Kodak Company: *See—*
Davis, Thomas G.; and Weaver, Max A., 4,267,306, Cl. 528-226.000.
Giles, Ralph R.; and Weaver, Max A., 4,267,104, Cl. 260-207.300.
Olsen, Eric G.; and Jackson, Winston J., Jr., 4,267,301, Cl. 528-93.000.
Sloan, Cephas H.; Wright, Jerry A.; and Morie, Gerald P., 4,267,002, Cl. 156-276.000.
Eaton Corporation: *See—*
Bradford, Jay H., 4,266,576, Cl. 138-40.000.
Goscenski, Edward J., Jr., 4,266,445, Cl. 74-711.000.
Eberle, William J., to General Battery Corporation. Cast-on method and apparatus for casting parts onto the lugs of lead-acid battery plates stacks. 4,266,597, Cl. 164-109.000.
Echlin Manufacturing Company, The: *See—*
Kasey, Michael K., 4,266,336, Cl. 29-596.000.
Ecodyne Corporation: *See—*
Ryan, Leo F., 4,267,039, Cl. 210-767.000.
Ecolasse, Guy: *See—*
Delaunay, Antoine; and Ecolasse, Guy, 4,266,832, Cl. 301-48.000.
Eda, Tadahiro; Tatsumi, Susumu; and Imai, Chikara, to Ricoh Company, Ltd. Electrostatographic apparatus comprising developing bias means. 4,266,870, Cl. 355-14.00D.
Eddy, William R., to Phillips Petroleum Company. Apparatus for assembling closures. 4,267,009, Cl. 156-538.000.
Edwards, Thomas W.; and Pennypacker, Ronald S., to RCA Corporation. Manufacture of thinned substrate imagers. 4,266,334, Cl. 29-583.000.
Egerer, Josef, to Staedtler & Uhl. Releasably interlocking needlestrip and needle-carrier for textile machines. 4,266,327, Cl. 28-299.000.
Eguchi, Chihiro: *See—*
Miura, Konoe; Eguchi, Chihiro; Takahashi, Yoshihiro; Oshima, Akinobu; Torige, Kazuo; and Bunya, Shinichi, 4,267,260, Cl. 430-302.000.
Eichenauer, Rudolf. Steering column and ignition lock for motor vehicle. 4,266,414, Cl. 70-252.000.
ElDifrawi, Ahmed A., to White, Letcher T. Method and apparatus for conserving waste energy. 4,266,404, Cl. 62-79.000.
Electric Power Research Institute: *See—*
Gamble, Bruce B., 4,267,473, Cl. 310-52.000.
Holmes, Francis A.; Kimblin, Clive W.; and Heberlei, Joachim V. R., 4,267,415, Cl. 200-144.00B.
Electric Power Research Institute, Inc.: *See—*
Park, Dong-Sil;; Breiter, Manfred W.; and King, Randall N., 4,266,712, Cl. 228-175.000.
Electricite de France (Service National): *See—*
Amouroux, Jacques; Rapakoulias, Demetre; and Cavadias, Simeon, 4,267,027, Cl. 204-179.000.
Electro-Biology, Inc.: *See—*
Ryaby, John P.; and Pilla, Arthur A., 4,266,532, Cl. 128-1.500.
Ryaby, John P.; and Pilla, Arthur A., 4,266,533, Cl. 128-1.500.
ELECTRO-OPTIK GmbH & Co. KG: *See—*
Menke, Josef F., 4,266,847, Cl. 350-6.600.
Elefritz, Robert A., Jr., to Firestone Tire & Rubber Company, The. Novel method for removal of sodium chloride from phosphazene rubber crumb swollen in water. 4,267,311, Cl. 528-499.000.
Eley, James M.: *See—*
McBurnett, James R.; and Eley, James M., 4,266,915, Cl. 418-126.000.
Eliassen, Carlo: *See—*
Schneider, Paul A.; and Eliassen, Carlo, 4,266,316, Cl. 15-304.000.
Ellis, Benjamin C., Jr., to Western Electric Company, Inc. Methods of and apparatus for making cable. 4,266,399, Cl. 57-293.000.
Ellis, Frank. Cooling system for condenser coils. 4,266,406, Cl. 62-183.000.
Ellis, Larry G.: *See—*
Carter, William R.; and Ellis, Larry G., 4,266,462, Cl. 89-1.50D.
Ellison, Bart T.: *See—*
Dickson, Leon L.; and Ellison, Bart T., 4,267,148, Cl. 422-53.000.
Emerson Electric Co.: *See—*
Gedeon, George C., 4,266,337, Cl. 29-614.000.
Endo, Hajime: *See—*
Nakagima, Shigeo; Takahashi, Ken; and Endo, Hajime, 4,266,828, Cl. 299-53.000.
Energy Conversion Devices, Inc.: *See—*
Hallman, Robert W.; Ovshinsky, Stanford R.; and de Neufville, John P., 4,267,261, Cl. 430-322.000.
Engel, Werner: *See—*
Bornefeld, Horst; Comberg, Gerd; Engel, Werner; and Neyer, Johannes, 4,266,373, Cl. 51-99.000.
English, Jackie L. Animated roping training apparatus. 4,266,779, Cl. 273-359.000.

Enlow, William P.: *See—*
Hechenbleikner, Ingenuin; Enlow, William P.; and Weis, James H., 4,267,358, Cl. 560-75.000.
Ennerdal, Leif; and Berg, Lars E., to Autoliv AB. Safety belt for vehicles. 4,266,325, Cl. 24-230.00A.
Enomoto, Minoru: *See—*
Asano, Hiroaki; Suzuki, Ikuo; and Enomoto, Minoru, 4,266,374, Cl. 51-165.870.
Nishimura, Hideo; Tokura, Yasufumi; Unno, Kunihiko; Enomoto, Minoru; Yokoe, Isamu; Shimizu, Norihiko; and Ohmura, Haruo, 4,266,375, Cl. 51-165.710.
Enso-Gutzeit Osakeyhto03: *See—*
Yli-Vakkuri, Erkki, 4,266,413, Cl. 68-158.000.
Envirotech Corporation: *See—*
Reese, Robert O.; Wieber, Karl R.; and Hartman, James T., 4,267,502, Cl. 323-237.000.
Teague, Richard K.; and Yu, Henry H. S., 4,266,948, Cl. 55-126.000.
Enzyme Technology, Inc.: *See—*
Stout, Robert L., 4,267,270, Cl. 435-7.000.
Epie, Jean-Claude: *See—*
Grassin, Jerome; Thouvenin, Maurice; and Epie, Jean-Claude, 4,266,331, Cl. 29-449.000.
Erdman, Arthur G.; and Peterson, Jeffory A., to Truth Incorporated. Operator for a casement-type window. 4,266,371, Cl. 49-252.000.
Erickson, Lennart G.; and Worne, Howard E. Biological sludge-energy recycling method. 4,267,049, Cl. 210-606.000.
Esanu, Andre, to Societe d'Etudes de Produits Chimiques. Halogeno derivatives of isopropylamino pyrimidine and therapeutic use. 4,267,181, Cl. 424-251.000.
Essery, John M.: *See—*
Kaneko, Takushi; Essery, John M.; Schmitz, Henry; and Doyle, Terrence W., 4,267,113, Cl. 260-345.200.
Estan Manufacturing Company: *See—*
Richardson, Mason E., 4,266,344, Cl. 33-126.70R.
Esterl, Leo A.: *See—*
Garbe, Reinhold F.; Esterl, Leo A.; and Koltun, Ronald E., 4,266,996, Cl. 156-154.000.
Esteve Subirana, Antonio, to Productos Esteve Internacional S.A. 6-Methoxy-2-acethylnaphthalene oximes. 4,267,334, Cl. 546-206.000.
Etablissements Francois Salomon et Fils: *See—*
Salomon, Georges P. J., 4,266,801, Cl. 280-605.000.
Etablissements Tornier: *See—*
Tornier, Alain, 4,266,302, Cl. 3-1.912.
Ethyl Corporation: *See—*
Niebylski, Leonard M., 4,266,946, Cl. 44-68.000.
Evans, David G.: *See—*
Hildreth, John D.; Tschopp, Anton F.; and Evans, David G., 4,266,939, Cl. 8-437.000.
Evans, Marion E.: *See—*
Bonin, Pete J., Jr.; Evans, Marion E.; and Bonin, Pete J., Sr., 4,266,537, Cl. 128-75.000.
Excel Industries, Inc.: *See—*
Mullet, David L.; Rilling, Raymond J.; and Voth, Elmer D., 4,266,617, Cl. 172-76.000.
Exxon Research and Engineering Company: *See—*
Maas, Edward T., Jr.; and Steger, John J., 4,267,157, Cl. 423-303.000.
Wronski, Christopher R.; and Myers, Bruce P., 4,266,984, Cl. 136-255.000.
F.I.A.M.M. S.p.A. Fabbrica Italiana Accumulatori Motocarri Montecchio: *See—*
Frigo, Domenico, 4,267,552, Cl. 340-388.000.
Fa. Bilfinger & Berger: *See—*
Bayer, Karl; Butt, Heinz G.; and Salewski, Jurgen, 4,266,888, Cl. 405-202.000.
Faber, William M., Sr.: *See—*
Holmes, Curtis L.; Faber, William M., Sr.; Francis, Gaylord L.; and Boykin, Otis F., 4,267,074, Cl. 252-514.000.
Faden, Alan I.: *See—*
Holaday, John W.; and Faden, Alan I., 4,267,182, Cl. 424-260.000.
Fadness, Quinten K., to RayGo, Inc. Adjustable load lifting spreader frame. 4,266,904, Cl. 414-460.000.
Fahey, Darryl R., to Phillips Petroleum Company. Method for producing ethylene polymers using treated catalysts containing titanium and vanadium. 4,267,293, Cl. 526-116.000.
Faiella, Joseph V. Footgear embodying podiatric sole. 4,266,553, Cl. 128-585.000.
Fairchild Camera & Instrument Corp.: *See—*
Pierce, John M.; Lehrer, William I.; and Radigan, Kenneth J., 4,267,012, Cl. 156-643.000.
Falzoni, Gianluigi, to Fiat Auto S.p.A. Automatic play compensation device for motor vehicle clutches. 4,266,649, Cl. 192-111.00A.
Farason, Harry J.: *See—*
Schroeder, Clifford A.; Fogg, Ralph L.; Farason, Harry J.; and Voorhees, Robert E., 4,266,470, Cl. 98-40.00R.
Farley, D. Gray. Socket retaining ring. 4,266,453, Cl. 81-177.00G.
Farmitalia Carlo Erba S.p.A.: *See—*
Cozzi, Paolo; Magni, Osvaldo; Bertone, Leone; Angelucci, Romano; and Lovisolo, Pier P., 4,267,327, Cl. 544-336.000.
Masi, Paolo; Suarato, Antonino; Bernardi, Luigi; and Arcamone, Federico, 4,267,116, Cl. 260-376.000.
Farr, Garth M.; and McCoy, Terence D., to Farr Oil Tool, Inc. Power tong assembly. 4,266,450, Cl. 81-57.330.
Farr Oil Tool, Inc.: *See—*
Farr, Garth M.; and McCoy, Terence D., 4,266,450, Cl. 81-57.330.
Farsan Enterprises Limited: *See—*
Lo, Shih H., 4,266,943, Cl. 44-51.000.
Fassett, Nyle W., to Clark Equipment Company. Overhead guard for lift truck. 4,266,808, Cl. 280-756.000.
Faulhaber, Fritz, to Retobobina Handelsanstalt. Electromotor. 4,267,477, Cl. 310-266.000.
Feasey, Ronald G.; and Griffin, Brian P., to Imperial Chemical Industries Limited. Aromatic copolyesters capable of forming an anisotropic melt. 4,267,304, Cl. 528-193.000.
Feldkamper, Richard, to Windmoller & Holscher. Method for making sacks provided with cross-bottoms. 4,266,469, Cl. 493-219.000.
Feldkaper, Richard: *See—*
Achelpohl, Fritz; Feldkaper, Richard; and Blom, Friedrich, 4,266,654, Cl. 198-425.000.
Feller, Otto; Skrobek, Alois; and Schmitz, Wilfried, to Goetze AG. Apparatus for positioning out-of-round workpieces particularly piston rings. 4,266,329, Cl. 29-222.000.
Ferranti Limited: *See—*
Liebing, Alan P., 4,266,431, Cl. 74-5.100.
Feser, Karl; and Brunnee, Curt, to Varian Mat GmbH. Ion detector with bipolar accelerating electrode. 4,267,448, Cl. 250-281.000.
Festag, Werner; and Muller, Hans-Ueli, to Swiss Aluminium Ltd. Device for the production of blisters. 4,266,416, Cl. 72-60.000.
F'Geppert, Erwin, to United States of America, Army. Locking connector. 4,266,591, Cl. 411-167.000.
Fiat-Allis Construction Machinery, Inc.: *See—*
Drone, Gary A.; and Rockwell, Harvey W., 4,267,545, Cl. 340-52.00R.
Fiat Auto S.p.A.: *See—*
Falzoni, Gianluigi, 4,266,649, Cl. 192-111.00A.
Findeisen, Kurt, to Bayer Aktiengesellschaft. Process for the preparation of oligomeric acrylic acids. 4,267,365, Cl. 560-205.000.
Finizio, Michael, to Du Pont de Nemours, E. I., and Company. Antidepressant pyrrolylpiperidines, their pharmaceutical compositions and method of use. 4,267,185, Cl. 424-267.000.
Firestone, Raymond A. Splash guard device. 4,267,150, Cl. 422-103.000.
Firestone Tire & Rubber Company, The: *See—*
Davis, James A.; and Koch, Robert C., 4,267,079, Cl. 260-3.500.
Elefritz, Robert A., Jr., 4,267,311, Cl. 528-499.000.
First National Packaging Co., Inc.: *See—*
Mykleby, Laurie G., 4,266,670, Cl. 206-600.000.
Fischer, Martin: *See—*
Thil, Lucien; Fischer, Martin; and Kindscher, Wolfgang, 4,267,122, Cl. 260-501.120.
Fischer, Peter: *See—*
Schwartz, Werner; Fischer, Peter; and Traulsen, Heinrich, 4,266,971, Cl. 75-69.000.
Fisher, George A.; and Mason, Gary E., to Caterpillar Tractor Co. Differential case and push-frame assembly. 4,266,628, Cl. 180-54.00F.
Flanagan, Joseph E., to Rockwell International Corporation. Chlorine-fluoride solid gas generator. 4,266,991, Cl. 149-42.000.
Fleer, Thomas P.; and Hannebaum, Reed E., to Brown Group, Inc. Apparatus for activating shoe assembly cement. 4,267,429, Cl. 219-215.000.
Flood, David N., to Celotex Corporation, The. Shingling template and method. 4,266,388, Cl. 52-748.000.
Flores, Charles A., to Ampex Corporation. Apparatus for controlling and stopping a transport mechanism at a predetermined cue point. 4,267,564, Cl. 360-72.300.
Floyd, Middleton B., Jr., to American Cyanamid Company. 1-Descarboxy-1-ketoester (ketoacid) prostaglandins. 4,267,361, Cl. 560-118.000.
Fluid Data Systems, Inc.: *See—*
Glassey, Gene, 4,266,430, Cl. 73-701.000.
Fogg, Ralph L.: *See—*
Schroeder, Clifford A.; Fogg, Ralph L.; Farason, Harry J.; and Voorhees, Robert E., 4,266,470, Cl. 98-40.00R.
Ford Aerospace & Communications Corp.: *See—*
McDonough, Robert M., 4,266,433, Cl. 74-10.330.
Ford, Clarence E., Jr.: *See—*
Dix, James F.; Ford, Clarence E., Jr.; Forker, Ray B., Jr.; and Johnson, Ronald E., 4,267,000, Cl. 156-235.000.
Ford Motor Company: *See—*
Mason, James L.; and Varjabedian, Steve, 4,266,817, Cl. 293-117.000.
Perkey, Conrad G.; and Bell, John L., 4,266,595, Cl. 164-41.000.
Petersen, Larry D.; and Squires, Stanley C., 4,266,638, Cl. 188-218.00R.
Pett, Robert A.; Qaderi, S. Burhan A.; and Tabar, Ronald J., 4,267,086, Cl. 260-28.50R.
Forker, Ray B., Jr.: *See—*
Dix, James F.; Ford, Clarence E., Jr.; Forker, Ray B., Jr.; and Johnson, Ronald E., 4,267,000, Cl. 156-235.000.
Formica Corporation: *See—*
Jaisle, Richard F.; and Bunkowski, Kenneth D., 4,267,240, Cl. 428-484.000.
Forrest, Jess: *See—*
Kuehnle, Manfred R.; Cox, Richard E.; Harris, George B., Jr.; Forrest, Jess; and Hardy, Carl D., 4,266,869, Cl. 355-8.000.
Forsberg, Georg L. K. Transport container. 4,266,902, Cl. 414-332.000.
Forschungsinstitut fur Holztechnologie: *See—*
Troger, Johannes; Lauter, Gernot; and Sporl, Heinrich, 4,266,893, Cl. 409-206.000.
Forster, Ian C.; Patrick, James F.; Tong, Yit C.; Black, Raymond C.; and Clark, Graeme M., to University of Melbourne, The. Prosthesis. 4,267,410, Cl. 179-107.0BC.

Foster, Edwin E.; and Foster, Thomas E., to Ladney, Michael, Jr. Wheel cover. 4,266,831, Cl. 301-37.0PB.
Foster, Thomas E.: *See—*
Foster, Edwin E.; and Foster, Thomas E., 4,266,831, Cl. 301-37.0PB.
Fotland, Richard A.; and Carrish, Jeffrey J., to Dennison Manufacturing Company. Electrostatic transfer printing employing ion emitting print head. 4,267,556, Cl. 346-153.100.
Foundation at New Jersey Institute of Technology, The: *See—*
Dauerman, Leonard; Rao, Krishna K.; Dabbs, Joseph C.; and Delaney, Brian, 4,267,156, Cl. 423-242.000.
Foundation: The Research Institute for Special Inorganic Materials, The: *See—*
Yajima, Seishi; Okamura, Kiyohito; Shishido, Toetsu; and Hasegawa, Yoshio, 4,267,210, Cl. 427-226.000.
Yajima, Seishi; Okamura, Kiyohito; Shishido, Toetsu; and Hasegawa, Yoshio, 4,267,211, Cl. 427-228.000.
Fox, Merlin D.: *See—*
Souder, James J., Jr.; Scarborough, Edward D., Jr.; and Fox, Merlin D., 4,266,747, Cl. 248-280.100.
Fram, Jerry R. Transmission drive with cyclic speed variations and uses thereof in compaction systems using dual wire-mesh belts. 4,266,924, Cl. 425-372.000.
Francis, Gaylord L.: *See—*
Holmes, Curtis L.; Faber, William M., Sr.; Francis, Gaylord L.; and Boykin, Otis F., 4,267,074, Cl. 252-514.000.
Frangatos, Gerassimos, to Mobil Oil Corporation. Amine derivatives of dialkylphosphonate-alklmaleate ester reaction products as antiwear/-load carrying additives and lubricants containing same. 4,267,063, Cl. 252-49.900.
Frank, Karl: *See—*
Kunitz, Friedrich-Wilhelm; Wolff, Erich; and Frank, Karl, 4,267,263, Cl. 430-469.000.
Franke, Albrecht: *See—*
Frickel, Fritz-Frieder; Franke, Albrecht; Koenig, Horst; Lenke, Hans-Dieter; and Gries, Josef, 4,267,187, Cl. 424-274.000.
Franke, Friedrich H.: *See—*
Daldrup, Heinz G.; Notthelfer, Gunther; Franke, Friedrich H.; and Limpach, Raymond, 4,266,968, Cl. 75-42.000.
Frant, Martin S.; and Soderberg, Jon, to Orion Research Incorporated. Chemically integrating dosimeter and gas analysis methods. 4,267,023, Cl. 204-1.00T.
Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See—*
Theurer, Josef; and Oellerer, Friedrich, 4,266,615, Cl. 171-16.000.
Fredd, John V., to Otis Engineering Corporation. Valve. 4,266,614, Cl. 166-332.000.
Fredericks, Alan D., to Oceanography International Corporation. Multiple breakpoint resealable ampoule. 4,266,681, Cl. 215-32.000.
Freitag, Dieter: *See—*
Konig, Klaus; Schreckenberg, Manfred; Lindner, Christian; Suling, Carlhans; and Freitag, Dieter, 4,267,303, Cl. 528-171.000.
French, Gordon B., to Occidental Oil Shale, Inc. In situ recovery of shale oil. 4,266,612, Cl. 166-299.000.
French, Gordon B., to Occidental Oil Shale, Inc. In-situ recovery of constituents from fragmented ore. 4,266,826, Cl. 299-2.000.
Fresenius, Eduard: *See—*
Schael, Wilfried, 4,267,041, Cl. 210-109.000.
Frey, Wolfgang; and Schoenauer, Wolfgang, to Sandoz Ltd. Anthraquinone compounds. 4,267,115, Cl. 260-373.000.
Frickel, Fritz-Frieder; Franke, Albrecht; Koenig, Horst; Lenke, Hans-Dieter; and Gries, Josef, to BASF Aktiengesellschaft. Aminopropanol derivatives of 2-(0-hydroxyphenyl)-pyrrole. 4,267,187, Cl. 424-274.000.
Friedrich, Karl, to Kramer-Werke GmbH. Motor vehicle with axle pivot steering. 4,266,629, Cl. 180-252.000.
Frigo, Domenico, to F.I.A.M.M. S.p.A. Fabbrica Italiana Accumulatori Motocarri Montecchio. Electromagnetic sound generator for automative vehicles and the like. 4,267,552, Cl. 340-388.000.
Frisbie, Richard N., to Whirlpool Corporation. Control circuit for a compactor. 4,267,462, Cl. 307-119.000.
Fritsch, Joseph E., to Massey-Ferguson Inc. High torque infinitely variable traction drive transmission. 4,266,446, Cl. 74-796.000.
Fritzsche Dodge & Olcott Inc.: *See—*
Willis, Brian J.; Christenson, Philip A.; and Barton, Derek H. R., 4,267,111, Cl. 260-343.210.
Froix, Michael F., to Celanese Corporation. Blend of wholly aromatic polyesters. 4,267,289, Cl. 525-444.000.
Frost, Charles C.; Gurney, Gerald W.; and Sytsma, Frederick R., to C. L. Frost & Son, Inc. Chain bracket with strengthened chain supports. 4,266,657, Cl. 198-687.000.
Frost, Charles C.; and Weis, Siegfried K., to C. L. Frost & Son, Inc. Chain bracket with strengthened chain supports. 4,266,658, Cl. 198-687.000.
Fuchs, Hugo: *See—*
Brand, Uwe; Fuchs, Hugo; and Schmitz, Ruediger, 4,267,105, Cl. 260-239.30A.
Fuji Photo Film Co., Ltd.: *See—*
Ikenoue, Shinpei; and Masuda, Takao, 4,267,267, Cl. 430-533.000.
Karino, Yukio; Sakaguchi, Shinji; and Sakakibara, Yoshio, 4,267,262, Cl. 430-463.000.
Kimura, Tsutomu; and Ohnishi, Masahiro, 4,267,548, Cl. 340-146.3AH.
Sakanoue, Seiki; Waki, Kokichi; Tsubota, Motohiko; Takahashi, Osamu; and Nakatsuka, Asao, 4,267,250, Cl. 430-214.000.
Sakawaki, Shinichi, 4,267,212, Cl. 427-240.000.
Sasazawa, Koji; Kitamoto, Tatsuji; Akashi, Goro; Masaki, Kouichi; and Dezawa, Shinichiro, 4,267,207, Cl. 427-129.000.
Sugimoto, Naohiko; Horie, Ikutaro; Nagao, Kameji; Yoneyama, Masakazu; Nakayama, Yasuhiro; and Yamamoto, Nobuo, 4,267,265, Cl. 430-523.000.
Fujii, Akio; Fukuoka, Takeyo; Muraoka, Yasuhiko; Takita, Tomohisa; and Umezawa, Hamao, to Nippon Kayaku Kabushiki Kaisha. Bleomycin group antibiotics. 4,267,102, Cl. 260-112.50R.
Fujikawa, Kanichi: *See—*
Nishiyama, Ryuzo; Fujikawa, Kanichi; Nasu, Rikuo; and Shigehara, Itaru, 4,267,336, Cl. 546-302.000.
Fujimura, Takashi: *See—*
Tomita, Yoshifumi; Nishizawa, Masahiro; and Fujimura, Takashi, 4,267,204, Cl. 427-68.000.
Fujisawa Pharmaceutical Co., Ltd.: *See—*
Kamiya, Takashi; Teraji, Tsutomu; Nakai, Yoshiharu; Sakane, Kazuo; and Goto, Jiro, 4,267,176, Cl. 424-246.000.
Kamiya, Takashi; Saito, Yoshihisa; Teraji, Tsutomu; Nakaguti, Osamu; and Oku, Teruo, 4,267,340, Cl. 548-187.000.
Fujita, Niitaka, to Matsushita Electric Industrial Co., Ltd. Coin dispenser device. 4,266,563, Cl. 133-4.00A.
Fujitsu Fanuc Limited: *See—*
Takemae, Yoshihiro; and Nakano, Masao, 4,267,464, Cl. 307-463.000.
Fujitsu Limited: *See—*
Ito, Takashi; and Hijiya, Shinpei, 4,266,985, Cl. 148-1.500.
Yoneda, Yasuhiro; Kitamura, Kenro; Naito, Jiro; and Kitakohji, Toshisuke, 4,267,258, Cl. 430-270.000.
Fukuhara, Toru, to Nippon Kogaku K.K. Diaphragm correcting means of an objective lens mounted on a single lens reflex camera of the TTL full aperture exposure measurement type. 4,266,865, Cl. 354-46.000.
Fukui, Takeo, to Honda Giken Kogyo Kabushiki Kaisha. Piston ring. 4,266,787, Cl. 277-160.000.
Fukuoka, Takeyo: *See—*
Fujii, Akio; Fukuoka, Takeyo; Muraoka, Yasuhiko; Takita, Tomohisa; and Umezawa, Hamao, 4,267,102, Cl. 260-112.50R.
Furuta, Koichi: *See—*
Norimatsu, Hideaki; and Furuta, Koichi, 4,266,519, Cl. 123-440.000.
Furuya, Yoichiro: *See—*
Sumikawa, Seiji; Niizuma, Hiroshi; Tonegawa, Hiromichi; Torizuka, Tsuneo; Furuya, Yoichiro; and Takashima, Norio, 4,266,604, Cl. 165-176.000.
G. D. Searle & Co.: *See—*
Hershenson, Fred M., 4,267,318, Cl. 542-422.000.
Gall, Rudi: *See—*
Berger, Herbert; Gall, Rudi; Kampe, Wolfgang; Bicker, Uwe; and Kuhn, Rolf, 4,267,174, Cl. 424-244.000.
Gallagher, Stephen F., to VFP Corporation. Plastic tube adapter. 4,266,814, Cl. 285-319.000.
Gallizia, Achille, to Industrie Pirelli S.p.A. Device for manufacturing boots and the like of elastomeric material. 4,266,750, Cl. 249-65.000.
Gallop, Paul M.; and Korb, Donald R., to Syntex (U.S.A.) Inc. Polymeric compositions and hydrogels formed therefrom. 4,267,295, Cl. 526-264.000.
Gamble, Bruce B., to Electric Power Research Institute. Superconducting generator thermal radiation shield having substantially uniform temperature. 4,267,473, Cl. 310-52.000.
Gandini, Roberto, to Officine Meccaniche Odolini Catullo s.a.s. di Roberto Gandini & C. Apparatus for calibrating the rate of delivery of injection pumps for diesel engines. 4,266,426, Cl. 73-119.00A.
Garbe, Reinhold F.; Esterl, Leo A.; and Koltun, Ronald E., to Spectra-Physics, Inc. Method and tool for producing centered parts having spherical surfaces. 4,266,996, Cl. 156-154.000.
Gardner, Mark R.: *See—*
Carroll, Arthur B.; Lazarevich, Vladeta D.; and Gardner, Mark R., 4,267,443, Cl. 250-221.000.
Gargis, John T.: *See—*
Campbell, Delmer E.; and Gargis, John T., 4,266,362, Cl. 43-66.000.
Garner, Fay T.; and Joubert, Jerauld D., to Melroe Multi-Wheel. Traction vehicle. 4,266,625, Cl. 180-6.480.
Garrett Corporation, The: *See—*
Sumegi, Robert B.; Woodhouse, Geoffrey D.; Mattson, George B.; Jansen, Harvey B.; Bolliger, Frederic E.; and Hatch, Robert A., 4,266,401, Cl. 60-39.16R.
Garrett, Walter L.; and Czerepinski, Ralph G., to Dow Chemical Company, The. Image-bearing lithographic plates with desensitizing coating. 4,266,481, Cl. 101-456.000.
Garrison, Earl G., to Thacker Container Company. Carton. 4,266,715, Cl. 229-37.00E.
Gaun, Viktor A.; Belousov, Anatoly V.; Petukhov, Vadim D.; Suxov, Gennady I.; Belyaev, Nikolai A.; Alyabiev, Vitaly K.; and Rassomakhin, Klimenty E. Percussion mechanism. 4,266,465, Cl. 91-234.000.
Gaus, Harry: *See—*
Milutzki, Udo; Gaus, Harry; Schotte, Dietwald; and Ramspeck, Klaus, 4,266,783, Cl. 369-41.000.
Gausmann, Hans: *See—*
Bruckner, Elmar; Gausmann, Hans; Schipper, Philipp; and Tausch, Walter, 4,267,149, Cl. 422-65.000.
Gaylord, Edson C., to Gaylord Industries, Inc. Kitchen ventilator with removable grease extractor. 4,266,529, Cl. 126-299.00D.
Gaylord Industries, Inc.: *See—*
Gaylord, Edson C., 4,266,529, Cl. 126-299.00D.
Gebrueder Loepfe AG: *See—*
Loepfe, Erich; Weidmann, Erich; and Graf, Walter, 4,267,554, Cl. 340-677.000.

Gedeon, George C., to Emerson Electric Co. Electric heating elements. 4,266,337, Cl. 29-614.000.
Geelhaar, Hans J.; Penzel, Erich; and Ley, Gregor, to BASF Aktiengesellschaft. Binders for paints. 4,267,091, Cl. 260-29.6TA.
Gem Instruments Corporation: *See*—
Ritzi, Thomas F., 4,266,871, Cl. 356-30.000.
General Atomic Company: *See*—
Kaae, James L.; Reynolds, George H.; Sterling, Stewart A.; and Yang, Ling, 4,267,019, Cl. 176-82.000.
General Battery Corporation: *See*—
Eberle, William J., 4,266,597, Cl. 164-109.000.
General Binding Corporation: *See*—
Staats, Henry N., 4,266,812, Cl. 281-29.000.
General Diving Corporation: *See*—
Ruchti, Heinz, 4,266,538, Cl. 128-204.260.
General Electric Company: *See*—
Bienz, Edward F., 4,266,492, Cl. 112-121.200.
Bluestein, Ben A., 4,267,298, Cl. 528-34.000.
Burns, Richard D., 4,266,994, Cl. 156-73.200.
Bussink, Jan; and Heuschen, Jean M. H., 4,267,096, Cl. 260-40.00R.
Campbell, Richard W., 4,267,286, Cl. 525-176.000.
Mark, Victor, 4,267,305, Cl. 528-199.000.
Prochazka, Svante, 4,266,978, Cl. 106-39.500.
Sahm, William H., III, 4,267,433, Cl. 219-491.000.
Zamek, Otto S., 4,267,231, Cl. 428-379.000.
Zorzi, Edward S., 4,266,442, Cl. 74-572.000.
General Mills, Inc.: *See*—
Brastad, William A., 4,267,420, Cl. 219-10.55E.
General Motors Corporation: *See*—
Pelchat, Paul F.; and Arlauskas, Alfonsas, 4,266,321, Cl. 16-145.000.
Geoco, Inc.: *See*—
Brown, Robert; and Proulx, Paul A., 4,267,446, Cl. 250-255.000.
Georgallis, Peter C., to Ramcor, Inc. Device for determining the configuration and calibrating long, towed underwater structures. 4,267,585, Cl. 367-13.000.
Georgie, Wolfgang: *See*—
Lindner, Heinz; Stopp, Fritz; Georgie, Wolfgang; Oehm, Werner; Muller, Lisbet; and Graubner, Brigitte, 4,266,411, Cl. 66-84.00R.
Geraci, James L., to Carl Zeiss, Inc. Surgical drape for an operating microscope. 4,266,663, Cl. 206-223.000.
Gerald T. Colwell: *See*—
Ramos, Gary A.; and Dell'Ara, Michael E., 4,266,740, Cl. 242-86.520.
Gerez-Pascual, Martin: *See*—
Redondo-Abad, Angel L.; Diaz-Nogueira, Eduardo; Gerez-Pascual, Martin; and Regife-Vega, Jose M., 4,266,972, Cl. 75-101.00R.
Germann, Willy, to BBC Brown, Boveri & Co., Ltd. Heat exchangers and method. 4,266,603, Cl. 165-171.000.
Gero Industries, Inc.: *See*—
Wolwowicz, Casimir S., 4,266,691, Cl. 222-77.000.
Gewerkschaft Eisenhutte Westfalia: *See*—
Plevak, Lubomir; and Dodt, Jurgen, 4,266,891, Cl. 405-291.000.
Gibbons, Wallace A.: *See*—
Barlow, Wayne K.; and Gibbons, Wallace A., 4,266,556, Cl. 128-760.000.
Gibson, David E. Portable cooler. 4,266,407, Cl. 62-371.000.
Gieseker, Donald R.: *See*—
Klien, Caren A.; and Gieseker, Donald R., 4,267,200, Cl. 426-595.000.
Gilbert, Robert W.; and Torau, Gunther W., to Baxter Travenol Laboratories, Inc. Apparatus for molding a plastic article. 4,266,927, Cl. 425-526.000.
Giles, Ralph R.; and Weaver, Max A., to Eastman Kodak Company. Dyes from selected substituted aniline diazo components and aniline couplers containing sulfate ester groups. 4,267,104, Cl. 260-207.300.
Gilissen, Hermanus P. J.: *See*—
Janssen, Theodorus M.; Gilissen, Hermanus P. J.; Soes, Lucas; Van Der Sanden, Ludovicus C.; and Van Dijk, Petrus R. M., 4,267,412, Cl. 200-6.00B.
Gilleland, Randall C.: *See*—
Bell, Oliver A., Jr.; Gilleland, Randall C.; and Chance, Davey J., 4,267,422, Cl. 219-69.00C.
Bell, Oliver A., Jr.; Gilleland, Randall C.; and Chance, Davey J., 4,267,423, Cl. 219-69.00S.
Gillet, Louis M. Combined tail gate and toolbox. 4,266,821, Cl. 296-37.600.
Ginn, Gregory R.: *See*—
Vissers, William, 4,267,599, Cl. 455-115.000.
Giras, Theodore C.: *See*—
Uram, Robert; and Giras, Theodore C., 4,267,458, Cl. 290-40.00R.
Gist Brocades N.V.: *See*—
Marx, Arthur F.; Smid, Peter M.; and Vellekoop, Pieter, 4,267,106, Cl. 260-239.570.
GKN-Stenman AB: *See*—
Tranberg, Erik R.; and Widen, Bo G., 4,266,711, Cl. 228-135.000.
Glaser, Denis V.; and Heeley, Norman, to Polycell Products Limited. Filler composition comprising a filler and an aqueous binder resin emulsion comprising a quick drying polymer emulsion and a flexible polymer emulsion. 4,267,092, Cl. 260-29.6RB.
Glaser, Edward L.: *See*—
Dechant, Thomas E.; Glaser, Edward L.; Pitt, Paul E.; and Way, Frederick, 4,267,568, Cl. 364-200.000.
Glassey, Gene, to Fluid Data Systems, Inc. Precision pressure-responsive fluid gauge. 4,266,430, Cl. 73-701.000.
Glaxo Laboratories Limited: *See*—
Gregson, Michael; and Sykes, Richard B., 4,267,320, Cl. 544-22.000.
Globus, Seymour: *See*—
Kohrn, Edward L.; and Globus, Seymour, 4,266,304, Cl. 4-415.000.
Godbersen, Harold W., to Comaco, Inc. Method and machine for slip forming median barrier walls for highways. 4,266,917, Cl. 425-64.000.
Goeke, George L.; and Karol, Frederick J., to Union Carbide Corporation. Process for preparing olefin oxide polymerization catalysts. 4,267,309, Cl. 528-413.000.
Goetze AG: *See*—
Bornefeld, Horst; Comberg, Gerd; Engei, Werner; and Neyer, Johannes, 4,266,373, Cl. 51-99.000.
Feller, Otto; Skrobek, Alois; and Schmitz, Wilfried, 4,266,329, Cl. 29-222.000.
Gohler, Wolfgang: *See*—
Schneider, Manfred; Kahmann, Gottfried; Gohler, Wolfgang; and Kircheiss, Andreas, 4,266,410, Cl. 66-84.00R.
Gold, Elijah H.: *See*—
Neustadt, Bernard R.; and Gold, Elijah H., 4,267,193, Cl. 424-309.000.
Goldfarb, Adolph E. Competitive game apparatus. 4,266,774, Cl. 273-275.000.
Goldfarb, Adolph E. Multi target-shooter game apparatus. 4,266,776, Cl. 273-310.000.
Goldie, Harry: *See*—
Cherry, William D.; and Goldie, Harry, 4,267,530, Cl. 333-13.000.
Goldsmith, Jeff M.: *See*—
Yates, Douglas A.; Hatch, Arthur E.; and Goldsmith, Jeff M., 4,267,151, Cl. 422-105.000.
Goldstein, Norman P.: *See*—
Playfoot, Kerwin C.; Bauer, Richard F.; and Goldstein, Norman P., 4,267,454, Cl. 250-370.000.
Gollott, Edgar R.; and Gollott, Thomas A. Method and apparatus for offshore depurating habitat for shellfish. 4,266,509, Cl. 119-2.000.
Gollott, Thomas A.: *See*—
Gollott, Edgar R.; and Gollott, Thomas A., 4,266,509, Cl. 119-2.000.
Gordon, John H. Pipe belling with external fluid pressure. 4,266,926, Cl. 425-387.100.
Gorelik, Roman. Spring loaded clamping device for drafting parallel lines. 4,266,343, Cl. 33-41.00D.
Gorre, Luisa E.: *See*—
Pastor, Ricardo C.; Chew, Remedios K.; and Gorre, Luisa E., 4,267,205, Cl. 427-93.000.
Goscenski, Edward J., Jr., to Eaton Corporation. Locking differential. 4,266,445, Cl. 74-711.000.
Goshima, Norio: *See*—
Matsuda, Akira; Goshima, Norio; Yasuda, Shigeo; Iwasaki, Motoaki; and Nishino, Hiroshi, 4,267,546, Cl. 340-58.000.
Goto, Jiro: *See*—
Kamiya, Takashi; Teraji, Tsutomu; Nakai, Yoshiharu; Sakane, Kazuo; and Goto, Jiro, 4,267,176, Cl. 424-246.000.
Goto, Ryuji: *See*—
Yamashita, Keitaro; and Goto, Ryuji, 4,267,248, Cl. 430-122.000.
Gould, Arthur. Belt support for cameras. 4,266,706, Cl. 224-253.000.
Gould Inc.: *See*—
Bourke, Robert F.; and Johansen, David K., 4,267,500, Cl. 318-806.000.
Reighter, David H., 4,267,402, Cl. 174-137.00R.
Govaert, Johan A., to Baird Corporation. Radioactivity distribution detection system and crystal detector assembly. 4,267,452, Cl. 250-366.000.
Grady, Mark P.: *See*—
Parker, Frederick A.; and Grady, Mark P., 4,266,539, Cl. 128-204.260.
Graf, Rupprecht: *See*—
Bender, Hans; Graf, Rupprecht; Unkelbach, Karl-Heinz; and Zabel, Wolf, 4,266,982, Cl. 134-18.000.
Graf, Walter: *See*—
Loepfe, Erich; Weidmann, Erich; and Graf, Walter, 4,267,554, Cl. 340-677.000.
Graham Magnetics, Inc.: *See*—
Johnson, Robert A., 4,267,206, Cl. 427-128.000.
Graham, W. Gordon. Magneto-optical colloidal cell and device. 4,267,509, Cl. 324-244.000.
Granda, Edward J.: *See*—
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Granda, Edward J.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,267,066, Cl. 252-174.110.
Grant, Cary E. Faucet extender. 4,266,320, Cl. 16-114.00R.
Grass, John W.: *See*—
Alice, Martin B.; and Grass, John W., 4,266,345, Cl. 33-169.00R.
Grassin, Jerome; Thouvenin, Maurice; and Epie, Jean-Claude, to Saint-Gobain Industries. Method of making a mirror. 4,266,331, Cl. 29-449.000.
Grassmann, Hans-Christian, to Siemens Aktiengesellschaft. Arrangement for suppressing high frequency currents in bearings of shafts. 4,267,461, Cl. 307-105.000.
Graubner, Brigitte: *See*—
Lindner, Heinz; Stopp, Fritz; Georgie, Wolfgang; Oehm, Werner; Muller, Lisbet; and Graubner, Brigitte, 4,266,411, Cl. 66-84.00R.
Graziano, Joseph L., to Mindey, Marlene S. Inflatable heel protector. 4,266,298, Cl. 2-22.000.
Greenleaf, John M., to Bristol Marine, Inc. Multiple unit flare launcher. 4,266,357, Cl. 42-1.00Z.

Gregorian, Razmic S.; and Namboodri, Chettoor G., to United Merchants and Manufacturers, Inc. Fabric treating compositions. 4,266,976, Cl. 106-2.000.

Gregson, Michael; and Sykes, Richard B., to Glaxo Laboratories Limited. Cephalosporin antibiotics. 4,267,320, Cl. 544-22.000.

Greschner, Johann: *See—*
Bohlen, Harald; Greschner, Johann; Kulcke, Werner; and Nehmiz, Peter, 4,267,259, Cl. 430-296.000.

Greune, Christian: *See—*
Schweikl, Ludwig; Greune, Christian; and Lottes, Paul, 4,266,725, Cl. 239-265.190.

Grieder, Alfred; Coers, Klaus-Jurgen; and Labuhn, Peter, to Ciba-Geigy Corporation. Process for the preparation of N-(1'-alkoxycarbonylethyl)-2,6-dialkylanilines. 4,267,356, Cl. 560-43.000.

Gries, Josef: *See—*
Frickel, Fritz-Frieder; Franke, Albrecht; Koenig, Horst; Lenke, Hans-Dieter; and Gries, Josef, 4,267,187, Cl. 424-274.000.

Griffin, Brian P.: *See—*
Feasey, Ronald G.; and Griffin, Brian P., 4,267,304, Cl. 528-193.000.

Griffin, Peter G. Collapsible frame structure for a child's push chair. 4,266,807, Cl. 280-650.000.

Grode, Gerald A.; and Miripol, Jeffrey E., to Baxter Travenol Laboratories, Inc. Red cell storage solution. 4,267,269, Cl. 435-2.000.

Groepl, Edmund: *See—*
Haidlen, Goetz; and Groepl, Edmund, 4,266,673, Cl. 209-139.00R.

Grohe, Klaus, to Hans Grohe GmbH & Co. KG. Spray device. 4,266,730, Cl. 239-587.000.

Groll, Manfred; and Wunderlich, Klaus, to Bayer Aktiengesellschaft. Reactive dyestuffs. 4,267,107, Cl. 260-242.200.

Gross, Glenn M., to Norlin Industries, Inc. Digital waveform generator having constant signal to noise ratio. 4,267,579, Cl. 364-718.000.

Grot, Walther G.; Molnar, Charles J.; and Resnick, Paul R., to Du Pont de Nemours, E. I., and Company. Fluorinated ion exchange polymer containing carboxylic groups, process for making same, and film and membrane thereof. 4,267,364, Cl. 560-183.000.

Grumman Aerospace: *See—*
Chen, Schoen-nan; Russak, Michael A.; Witzke, Horst; Reichman, Joseph; and Deb, Satyendra K., 4,266,338, Cl. 29-623 200.

Grundfest, Michael A., to Thomas & Betts Corporation. Compression tool. 4,266,419, Cl. 72-410.000.

Gruppo Lepetit S.p.A.: *See—*
White, Richard J.; and Lancini, Giancarlo, 4,267,274, Cl. 435-253.000.

Gschwendtner, Joerg: *See—*
Haug, Werner; Gschwendtner, Joerg; and Schnadt, Robert, 4,267,465, Cl. 307-238.300.

GTE Laboratories Incorporated: *See—*
Dempsey, Martin E.; and Lee, Ching W., 4,267,533, Cl. 333-151.000.

GTE Products Corporation: *See—*
Brun, Craig W.; and Hand, Wilfred L., 4,267,529, Cl. 333-12.000.
Brun, Craig W.; and Hand, Wilfred L., 4,267,602, Cl. 455-182.000.

Guerpont, Maurice R., to Societe Anonyme de Telecommunications. Circuit probing apparatus. 4,267,507, Cl. 324-158.00P.

Guglielmetti, Leonardo, to Ciba-Geigy Corporation. Process for the manufacture of 2,5-bis-(benzoxazolyl)-thiophene compounds. 4,267,343, Cl. 548-220.000.

Guilbert, Curtis R., to Minnesota Mining and Manufacturing Company. Epoxy resin powder for applying electrical-insulating coating to wire. 4,267,300, Cl. 528-92.000.

Guinan, Thomas, to Heinemann Electric Company. Circuit breaker having a cam for external adjustment of its trip point. 4,267,539, Cl. 335-42.000.

Gulf Research & Development Company: *See—*
Austin, Richard G.; Pretzer, Wayne R.; and Kobylinski, Thaddeus P., 4,267,379, Cl. 568-385.000.
Austin, Richard G.; Pretzer, Wayne R.; and Kobylinski, Thaddeus P., 4,267,380, Cl. 568-385.000.
Hartle, Robert J.; and Singerman, Gary M., 4,266,947, Cl. 44-68.000.

Gunn, Robert D. Safety storm window. 4,266,594, Cl. 160-354.000.

Gupton, John T.: *See—*
Petree, Harris E.; Pociask, Joseph R.; and Gupton, John T., 4,267,347, Cl. 548-262.000.

Gurney, Gerald W.: *See—*
Frost, Charles C.; Gurney, Gerald W.; and Sytsma, Frederick R., 4,266,657, Cl. 198-687.000.

Gurubatham, Vincent P., to Whirpool Corporation. Dishwasher spray arm mounting. 4,266,565, Cl. 134-144.000.

Gustav F. Gerdts KG: *See—*
Sieglitz, Manfred, 4,266,570, Cl. 137-613.000.

Gutehoffnungshutte Sterkrade AG: *See—*
Bayer, Karl; Butt, Heinz G.; and Salewski, Jurgen, 4,266,888, Cl. 405-202.000.

Guterman, Daniel C., to Texas Instruments Incorporated. Electrically erasable memory with self-limiting erase. 4,267,558, Cl. 357-41.000.

Gutrigde, Jack E.: *See—*
Marulic, Walter J.; and Gutrigde, Jack E., 4,266,487, Cl. 105-397.000.

Guzowski, Matthew M.; Schaffer, Stephen P.; and Wright, David C., to J. M. Ney Company, The. Tarnish-resistant gold color alloy and dental restorations employing same. 4,266,973, Cl. 75-134.00N.

H & J Sales: *See—*
Jacobsen, Merlin D.; Jacobsen, David O.; and Harrison, Claude E., 4,266,898, Cl. 414-24.500.

Habegger, Willy: *See—*
Lauber, Ernst, 4,266,627, Cl. 180-8.00B.

Habighorst, Harry D. Wall switch for convenience outlets. 4,267,460, Cl. 307-38.000.

Hackney, Stanley, to United Kingdom Atomic Energy Authority. Particle-in-gas filtration. 4,266,955, Cl. 55-412.000.

Hacskaylo, John J.; and Hacskaylo, Michael, to United States of America, Army. Collinear aiming light image viewer. 4,266,873, Cl. 356-251.000.

Hacskaylo, Michael: *See—*
Hacskaylo, John J.; and Hacskaylo, Michael, 4,266,873, Cl. 356-251.000.

Hadden, James P., to Hobart Corporation. Use of acid as an analysis aid in salted meat samples. 4,266,423, Cl. 73-15.00B.

Haepp, Hans J.: *See—*
Happel, Robert; and Haepp, Hans J., 4,266,727, Cl. 239-409.000.

Haga, Takahiro: *See—*
Nishiyama, Ryuzo; Kimura, Fumio; Haga, Takahiro; Sakashita, Nobuyuki; and Nishikawa, Tetsuji, 4,266,963, Cl. 71-92.000.

Hagen, Helmut; and Kohler, Rolf-Dieter, to BASF Aktiengesellschaft. Process for the preparation of 2-substituted-alkyl-1-alkyl-nitroimidazoles. 4,267,349, Cl. 548-339.000.

Hager, Donald G.; and Rubel, Frederick, Jr., to Aluminum Company of America. Water treatment for selective removal of nitrates. 4,267,057, Cl. 210-678.000.

Hahn, Ortwin: *See—*
Weidner, Richard; and Hahn, Ortwin, 4,266,928, Cl. 425-584.000.

Haidlen, Goetz; and Groepl, Edmund, to Wibau Maschinenfabrik Hartmann AG. Apparatus for classifying dust materials. 4,266,673, Cl. 209-139.00R.

Haines, Rolf; and Reid, Robert M., to Massey-Ferguson Services N.V. Sugar cane planter. 4,266,490, Cl. 111-3.000.

Hakner, Robert. Internal combustion rotary engine. 4,266,516, Cl. 123-241.000.

Hale, Thomas K.: *See—*
Kavaloski, Peter P.; and Hale, Thomas K., 4,266,305, Cl. 4-480.000.

Halen-Elliot do Brazil Industria e Comercio Equipamentos de Precisao Ltda.: *See—*
Landau, Sergio, 4,266,541, Cl. 128-207.230.

Hall, Dennis S., to USM Corporation. Apparatus for use in laminating a workpiece. 4,266,312, Cl. 12-52.000.

Hall, J. R.: *See—*
Hall, John R., 4,266,525, Cl. 126-121.000.

Hall, James J.: *See—*
Dillon, Robert F., Jr.; Hall, James J.; and Zamfirescu, Leon N., 4,266,842, Cl. 339-97.00P.

Hall, John R., to Hall, J. R.; and Hall, R. J. Prefabricated fireplace foundation. 4,266,525, Cl. 126-121.000.

Hall, R. J.: *See—*
Hall, John R., 4,266,525, Cl. 126-121.000.

Hall, Roger E. Breakaway safety base. 4,266,768, Cl. 273-25.000.

Hallman, Robert W.; Ovshinsky, Stanford R.; and de Neufville, John P., to Energy Conversion Devices, Inc. Method for full format imaging. 4,267,261, Cl. 430-322.000.

Halstead, Louis N., to Mobil Oil Corporation. Method for protecting a carbon dioxide production well from corrosion. 4,266,607, Cl. 166-244.00C.

Halstrom, John B.; and Kovacs, Karoly G., to Proteinkemisk Institut. tilknyttet Akademiet for de tekniske Videnskaber. N-Substituted N-carboxyanhydrides of α-amino acids and their application in the preparation of peptides. 4,267,344, Cl. 548-227.000.

Haltsonen, Eino J.; and Oksanen, Martti T., to Valmet Oy. Method for changing fabrics in paper manufacturing machines. 4,267,018, Cl. 162-200.000.

Hamaguri, Kenji, to Minolta Camera Kabushiki Kaisha. Digital oximeter. 4,266,554, Cl. 128-633.000.

Hanada, Tsuneo; and Mikami, Ryuzo, to Toray Silicone Company, Ltd. Room temperature curable silicone resins. 4,267,297, Cl. 528-18.000.

Hand, Wilfred L.: *See—*
Brun, Craig W.; and Hand, Wilfred L., 4,267,529, Cl. 333-12.000.
Brun, Craig W.; and Hand, Wilfred L., 4,267,602, Cl. 455-182.000.

Hanisch, Horst; Rodder, Karl-Martin; Buning, Robert; and Hass, Hans-Jurgen, to Dynamit Nobel Aktiengesellschaft. Aqueous suspension of inorganic oxidic material. 4,267,093, Cl. 260-29.60H.

Hannebaum, Reed E.: *See—*
Fleer, Thomas P.; and Hannebaum, Reed E., 4,267,429, Cl. 219-215.000.

Hans Grohe GmbH & Co. KG: *See—*
Grohe, Klaus, 4,266,730, Cl. 239-587.000.

Hans, Waldemar: *See—*
Kulke, Gunther; and Hans, Waldemar, 4,266,729, Cl. 239-533.120.

Hansch, Ferdinand: *See—*
Schmidt, Karl; Hansch, Ferdinand; Rombrecht, Hans-Malte; and Beck, Hans-Joachim, 4,267,232, Cl. 428-379.000.

Hanson, Martin B., to Interpace Corporation. Method of decorating a surface of a ceramic article. 4,267,209, Cl. 427-199.000.

Hanyu, Susumu; and Tonomura, Yoshinobu, to Janome Sewing Machine Co., Ltd. Electronic pattern stitching sewing machine. 4,266,493, Cl. 112-158.00E.

Happel, Robert; and Haepp, Hans J., to Daimler-Benz Aktiengesellschaft. Double-needle injection-valve. 4,266,727, Cl. 239-409.000.

Harada, Hideki; Yamashita, Keitaro; and Yamamoto, Katsunobu, to Hitachi Metals, Ltd. Developing roll for use in electrostatic developing apparatus employing magnetic particles. 4,266,328, Cl. 29-116.00R.

Harada, Hideo: *See*—
Umeda, Kaoru; and Harada, Hideo, 4,267,601, Cl. 455-165.000.
Hardy, Carl D.: *See*—
Kuehnle, Manfred R.; Cox, Richard E.; Harris, George B., Jr.; Forrest, Jess; and Hardy, Carl D., 4,266,869, Cl. 355-8.000.
Hardy, Nicolas; Lerot, Luc; and Walraevens, Rene, to Propylox. Process for the manufacture of carboxylic peracids. 4,267,124, Cl. 260-502.00R.
Harmsen, John L., to Stedef S.A. Rail fastener. 4,266,720, Cl. 238-349.000.
Harnischfeger Corporation: *See*—
Juergens, Dieter C., 4,266,679, Cl. 212-181.000.
Harper, Lee R.: *See*—
Burkhart, Dean C.; Harper, Lee R.; and Sommerfeld, Eugene G., 4,267,288, Cl. 525-438.000.
Harris, George B., Jr.: *See*—
Kuehnle, Manfred R.; Cox, Richard E.; Harris, George B., Jr.; Forrest, Jess; and Hardy, Carl D., 4,266,869, Cl. 355-8.000.
Harrison, Claude E.: *See*—
Jacobsen, Merlin D.; Jacobsen, David O.; and Harrison, Claude E., 4,266,898, Cl. 414-24.500.
Hartle, Robert J.; and Singerman, Gary M., to Gulf Research & Development Company. Gasoline composition containing aryl o-aminoazides. 4,266,947, Cl. 44-68.000.
Hartman, James T.: *See*—
Reese, Robert O.; Wieber, Karl R.; and Hartman, James T., 4,267,502, Cl. 323-237.000.
Hartwimmer, Robert; and Kuhls, Jurgen, to Hoechst Aktiengesellschaft. Stabilized copolymers based on ethylene and tetrafluoroethylene, and processes for their preparation. 4,267,098, Cl. 260-45.75W.
Hasegawa, Junzo; Kawabata, Susumu; Niimi, Hiroshi; Suzuki, Yasuhiko; Akatsuka, Masaki; and Tsunekawa, Takahiko, to Kabushiki Kaisha Toyota Chuo Kenkyusho; and Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Silver weight unevenness correcting apparatus. 4,266,324, Cl. 19-239.000.
Hasegawa, Yoshio: *See*—
Yajima, Seishi; Okamura, Kiyohito; Shishido, Toetsu; and Hasegawa, Yoshio, 4,267,210, Cl. 427-226.000.
Yajima, Seishi; Okamura, Kiyohito; Shishido, Toetsu; and Hasegawa, Yoshio, 4,267,211, Cl. 427-228.000.
Hashimoto, Isao: *See*—
Imai, Ichiro; Hashimoto, Isao; Suzuki, Keiji; and Nakagawa, Hiroaki, 4,267,387, Cl. 568-568.000.
Hashimoto, Nobuyuki: *See*—
Sakakibara, Naoji; and Hashimoto, Nobuyuki, 4,266,517, Cl. 123-333.000.
Hashimoto, Shintaro; and Nishimura, Toshio, to Sharp Kabushiki Kaisha. Low power consumption integrated circuit for a combined timepiece and calculator. 4,267,577, Cl. 364-707.000.
Hashino, Yasuo; Hayano, Fusakazu; and Toyomoto, Kazuo, to Asahi Kasei Kogyo Kabushiki Kaisha; and Morishita Pharm. Inline intravenous final filter unit. 4,267,053, Cl. 210-650.000.
Haskell, Theodore H.; Hutt, Marland P., Jr.; and Nicolaides, Ernest D., to Warner-Lambert Company. Novel antibacterial amide compounds and process means for producing the same. 4,267,180, Cl. 424-251.000.
Hass, Hans-Jurgen: *See*—
Hanisch, Horst; Rodder, Karl-Martin; Buning, Robert; and Hass, Hans-Jurgen, 4,267,093, Cl. 260-29.60H.
Hastings, Dawson W.: *See*—
Wheeler, Keith A.; and Hastings, Dawson W., 4,266,618, Cl. 172-314.000.
Hatch, Arthur E.: *See*—
Yates, Douglas A.; Hatch, Arthur E.; and Goldsmith, Jeff M., 4,267,151, Cl. 422-105.000.
Hatch, Robert A.: *See*—
Sumegi, Robert B.; Woodhouse, Geoffrey D.; Mattson, George B.; Jansen, Harvey B.; Bolliger, Frederic E.; and Hatch, Robert A., 4,266,401, Cl. 60-39.16R.
Hattori, Tadashi: *See*—
Iwata, Toshiharu; and Hattori, Tadashi, 4,267,482, Cl. 313-143.000.
Nishida, Minoru; Hattori, Tadashi; and Yamaguchi, Hiroaki, 4,266,518, Cl. 123-416.000.
Hauck, Frederic P.; Cimarusti, Christopher M.; and Sundeen, Joseph E., to E. R. Squibb & Sons, Inc. 5,6,7,8-Tetrahydronaphthalene hypotensive agents. 4,267,373, Cl. 564-428.000.
Haug, Werner; Gschwendtner, Joerg; and Schnadt, Robert, to International Business Machines Corporation. Circuit for recharging the output nodes of field effect transistor circuits. 4,267,465, Cl. 307-238.300.
Hauhinco Maschinenfabrik G. Hausherr, Jochums & Co. KG: *See*—
Jochums, Peter; Stratmann, Klaus; Henkel, Egon; and Wildfurster, Heinrich, 4,266,484, Cl. 105-29.00R.
Hauser, Manfred: *See*—
Schuttenberg, Eckard; Hauser, Manfred; Hommen, Winfried; and Sopha, Klaus, 4,266,572, Cl. 137-625.630.
Hawkins, Wallace H. Tow bar apparatus. 4,266,800, Cl. 280-491.00D.
Hayano, Fusakazu: *See*—
Hashino, Yasuo; Hayano, Fusakazu; and Toyomoto, Kazuo, 4,267,053, Cl. 210-650.000.
Hayashi, Kiyoshi, to Nippon Kogaku K.K. Wide angle zoom lens system having shortened closeup focal length. 4,266,860, Cl. 350-426.000.
Hayashi, Michio. Slip-prevention device for vehicle tires. 4,266,593, Cl. 152-218.000.
Hayashi, Mishio. Interval-expanding timer compensated for drift and nonlinearity. 4,267,436, Cl. 235-92.00T.
Hayashi, Shigeyuki: *See*—
Katoh, Yasuo; Kakegawa, Hideo; Hayashi, Shigeyuki; and Yamashita, Tadakazu, 4,267,085, Cl. 260-28.5AS.
Hayashi, Shinjiro; Taniyama, Kiyoshi; Kikuchi, Kenichi; and Akashi, Teruo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Vibration damping device for a mechanical clutch release system. 4,266,439, Cl. 74-501.00R.
Hayashi, Torahiko; Kageyama, Minoru; and Morikawa, Michio, to Rheon Automatic Machinery Co., Ltd. Apparatus for continuously manufacturing multi-layered dough materials. 4,266,920, Cl. 425-133.100.
Haynes, Harvey H.: *See*—
Rail, Robert D.; and Haynes, Harvey H., 4,266,889, Cl. 405-223.000.
Heberlei, Joachim V. R.: *See*—
Holmes, Francis A.; Kimblin, Clive W.; and Heberlei, Joachim V. R., 4,267,415, Cl. 200-144.00B.
Hechenbleikner, Ingenuin; Enlow, William P.; and Weis, James H., to Borg-Warner Corporation. Phenolic ester inhibitor. 4,267,358, Cl. 560-75.000.
Heck, Roland H.; Oleck, Stephen M.; Shih, Stuart S.; and Wilson, Robert C., to Mobil Oil Corporation. Upgrading of aromatic liquids. 4,267,033, Cl. 208-216.0PP.
Heeley, Norman: *See*—
Glaser, Denis V.; and Heeley, Norman, 4,267,092, Cl. 260-29.6RB.
Heeres, Jan; and Backx, Leo J. J., to Janssen Pharmaceutica, N.V. Heterocyclic derivatives of (4-phenylpiperazin-1-yl-aryloxymethyl-1,3-dioxolan-2-yl)methyl-1H-imidazoles and 1H-1,2,4-triazoles. 4,267,179, Cl. 424-25.00D.
Heess, Gerhard; Schwab, Manfred; and Stroh, Walter, to Robert Bosch GmbH. Apparatus and method for improving the jolt control in a motor vehicle drive system. 4,266,447, Cl. 74-858.000.
Hehl, Karl. Convertible hopper mounting for injection molding machine. 4,266,694, Cl. 222-167.000.
Heimberg, Manfred; and Rekers, Louis J., to National Distillers and Chemical Corp. Process for preparing vinyl acetate-ethylene copolymer latices. 4,267,090, Cl. 260-29.60R.
Heine, Hans-Georg: *See*—
Knops, Hans-Joachim; Heine, Hans-Georg; Draber, Wilfried; and Brandes, Wilhelm, 4,267,186, Cl. 424-272.000.
Heinemann Electric Company: *See*—
Guinan, Thomas, 4,267,539, Cl. 335-42.000.
Heino, Heimo J.: *See*—
Setala, Pekka T.; Makipirtti, Simo A. I.; and Heino, Heimo J., 4,266,512, Cl. 122-5.50R.
Hellin, Michel: *See*—
Torck, Bernard; Van Landeghem, Hugo; Vu, Quang D.; and Hellin, Michel, 4,267,393, Cl. 568-697.000.
Helm, Siegfried; and Sprang, Peter, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Wind power plant and method of erecting it. 4,266,911, Cl. 416-9.000.
Hempel, Hans-Ulrich: *See*—
Blum, Helmut; Hempel, Hans-Ulrich; and Worms, Karl-Heinz, 4,267,108, Cl. 260-326.610.
Henderson, Larry D.; and Johnson, Craig E., to United States of America, Navy. Method for high strength double base solventless gun propellant. 4,267,132, Cl. 264-3.00B.
Henkel, Egon: *See*—
Jochums, Peter; Stratmann, Klaus; Henkel, Egon; and Wildfurster, Heinrich, 4,266,484, Cl. 105-29.00R.
Henkel Kommanditgesellschaft auf Aktien: *See*—
Blum, Helmut; Hempel, Hans-Ulrich; and Worms, Karl-Heinz, 4,267,108, Cl. 260-326.610.
Christophliemk, Peter; Wust, Willi; and Carduck, Franz-Josef, 4,267,158, Cl. 423-329.000.
Schaper, Ulf-Armin; Conrad, Jens; and Bruns, Klaus, 4,267,075, Cl. 252-522.00R.
Henne, Werner; Dunweg, Gustav; Schmitz, Werner; Pohle, Raimund; and Lawitzki, Friedrich, to Akzo N.V. of Arnhem/Nederland. Dialyzing membrane with adsorbent layer. 4,267,047, Cl. 210-490.000.
Henrick, Clive A.: *See*—
Anderson, Richard J.; and Henrick, Clive A., 4,267,359, Cl. 560-104.000.
Anderson, Richard J.; and Henrick, Clive A., 4,267,363, Cl. 560-183.000.
Heppe, Karl-Julius, to Meyer, Roth & Pastor. Apparatus for the successive welding of C-shaped, pre-bent, interlinked chain links. 4,267,421, Cl. 219-51.000.
Hercules Incorporated: *See*—
Landoll, Leo M., 4,267,310, Cl. 260-40.00R.
Long, Wendell P., 4,267,294, Cl. 526-125.000.
Herman, Donald G., to Smock Material Handling Company, Inc. Accumulating-type powered roller conveyor. 4,266,660, Cl. 198-781.000.
Hermann Hemscheidt Maschinenfabrik GmbH & Co.: *See*—
Maykemper, Alfred, 4,266,892, Cl. 405-293.000.
Hernandez, Victor M., to International Telephone and Telegraph Corporation. AMI Decoder apparatus. 4,267,595, Cl. 375-95.000.
Hersh, John R.: *See*—
Trueblood, Troy M.; and Moulton, Robert H., 4,267,118, Cl. 260-428.000.
Hershenson, Fred M., to G. D. Searle & Co. 1-(Diarylmethyl)-4-piperidinamine and derivatives thereof. 4,267,318, Cl. 542-422.000.

Heuschen, Jean M. H.: *See*—
Bussink, Jan; and Heuschen, Jean M. H., 4,267,096, Cl. 260-40.00R.
Hidai, Yutaka; and Okuda, Nobuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Electron beam type exposure apparatus. 4,267,456, Cl. 250-492.00A.
Hideshima, Makoto: *See*—
Muramoto, Ken-ichi; Tani, Keizo; Tomisawa, Yutaka; and Hideshima, Makoto, 4,267,557, Cl. 357-20.000.
Higaki, Kazuhiko: *See*—
Naito, Kazuaki; Tetekawa, Takaiki; Sogo, Shigeyuki; Higaki, Kazuhiko; Yasuoka, Tetu; and Hosoi, Hidetoshi, 4,266,885, Cl. 405-109.000.
Higashiyama, Takao; and Nishikawa, Toshio, to Diamond Shamrock Corporation. Anticorrosive coating composition. 4,266,975, Cl. 106-1.120.
Higgins, Robert W.; and Robichaud, Roger E., to United States of America, Energy. Fiber optics welder having movable aligning mirror. 4,266,852, Cl. 350-96.200.
Hightower, John H., to Holmes, Tommy Lee. Safety bumper for trucks. 4,266,818, Cl. 293-150.000.
Higuchi, Kanji: *See*—
Nakajima, Koichi; Ishiguro, Tomoji; Okamoto, Tokuhiko; Konaka, Minoru; Nagai, Minoru; Higuchi, Kanji; and Sasaki, Kenji, 4,267,483, Cl. 313-143.000.
Hijiya, Shinpei: *See*—
Ito, Takashi; and Hijiya, Shinpei, 4,266,985, Cl. 148-1.500.
Hikake, Norio: *See*—
Nishibayashi, Katsumi; Amagai, Yoshimi; Hikake, Norio; Kouchi, Toshihiro; and Aizawa, Tatsuo, 4,267,246, Cl. 430-98.000.
Hildreth, John D.; Tschopp, Anton F.; and Evans, David G., to Ciba-Geigy Corporation. Composition of 4-amino-4'-nitrostilbene-2,2'-disulphonic acid diazo compounds and coloring process. 4,266,939, Cl. 8-437.000.
Hilfiker, William K., to Reinforced Earth Company, The. Retaining wall and connector therefor. 4,266,890, Cl. 405-286.000.
Hilliker, Stephen E., to Motorola, Inc. Temperature sensing circuit. 4,267,468, Cl. 307-310.000.
Himmetsberger, Alois, to TMC Corporation. Ski brake. 4,266,803, Cl. 280-605.000.
Hintz, Gerhard: *See*—
Keller, Guenter; Pohl, Andreas; and Hintz, Gerhard, 4,266,467, Cl. 91-437.000.
Hipp, Richard D.: *See*—
Bresina, Larry J.; and Hipp, Richard D., 4,266,868, Cl. 355-3.0DD.
Hirabayashi, Hideo; Yamaguchi, Hiroshi; and Uemura, Masahiko, to Toa Nenryo Kogyo Kabushiki Kaisha. Coking process. 4,267,031, Cl. 208-106.000.
Hirbod, Farrokh. Wind and wave energy generator. 4,266,403, Cl. 60-698.000.
Hishida, Tadashi, to V.I.V. Engineering Co., Ltd. Braking device. 4,266,634, Cl. 188-75.000.
Hitachi, Ltd.: *See*—
Iida, Shinya; Ueki, Kazuyoshi; Komatsu, Hideo; and Mitzutani, Tatsumi, 4,267,013, Cl. 156-643.000.
Kawakami, Kazuhiko; and Sugiura, Noboru, 4,267,470, Cl. 307-515.000.
Miyoshi, Tadahiko; and Yamazaki, Takeo, 4,266,979, Cl. 106-57.000.
Momma, Naohiro; and Taniguchi, Hiroyuki, 4,266,990, Cl. 148-189.000.
Ohba, Shinya; Takemoto, Iwao; Nakai, Masaaki; Ando, Haruhisa; and Kubo, Masaharu, 4,267,469, Cl. 307-311.000.
Ohta, Norio; Ishida, Fumihiko; Ikeda, Tadashi; Ando, Keikichi; and Sugita, Yutaka, 4,267,230, Cl. 428-336.000.
Tomita, Yoshifumi; Nishizawa, Masahiro; and Fujimura, Takashi, 4,267,204, Cl. 427-68.000.
Yokoyama, Toshiaki, 4,267,459, Cl. 290-52.000.
Yoneda, Kanji; Yuminaka, Takeo; and Nakazato, Masao, 4,266,632, Cl. 187-29.00R.
Hitachi Metals, Ltd.: *See*—
Harada, Hideki; Yamashita, Keitaro; and Yamamoto, Katsunobu, 4,266,328, Cl. 29-116.00R.
Yamashita, Keitaro; and Goto, Ryuji, 4,267,248, Cl. 430-122.000.
Ho, Benny K-C: *See*—
Bousaid, Issam S.; and Ho, Benny K-C, 4,266,611, Cl. 166-273.000.
Ho, Morris D., to Bandag Incorporated. Method and apparatus for non-destructive inspection of tires. 4,266,428, Cl. 73-146.000.
Hobart Corporation: *See*—
Hadden, James P., 4,266,423, Cl. 73-15.00B.
Hoechst Aktiengesellschaft: *See*—
Dursch, Walter; and Kleiner, Hans-Jerg, 4,267,125, Cl. 260-545.00P.
Hartwimmer, Robert; and Kuhls, Jurgen, 4,267,098, Cl. 260-45.75W.
Kuxdorf, Bernhard; Wissel, Kurt; and Kaiser, Karl, 4,266,949, Cl. 55-186.000.
Wiezer, Hartmut, 4,267,322, Cl. 544-180.000.
Hoffmann-La Roche Inc.: *See*—
Bollag, Werner; Ruegg, Rudolf; and Ryser, Gottlieb, 4,267,382, Cl. 568-442.000.
Hoffmann nee Vas, Katalin: *See*—
Dobo, Janos; Takacs, Erzsebet; Hortobagyi, Gyozo; Skvorecz nee Hajnoczy, Marianne; Kolbe, Ilona; and Hoffmann nee Vas, Katalin, 4,267,138, Cl. 264-117.000.
Hofmann, Kurt H. Water filter, in particular for aquarium water. 4,267,042, Cl. 210-169.000.
Holaday, John W.; and Faden, Alan I., to United States of America, Army. Narcotic antagonists in the therapy of shock. 4,267,182, Cl. 424-260.000.
Holata, Jan: *See*—
Sevcik, Stanislav; Trekoval, Jiri; Holata, Jan; and Stamberg, Jiri, 4,267,287, Cl. 525-271.000.
Holec N.V.: *See*—
Brinkman, Willem, 4,266,523, Cl. 123-499.000.
Holland, Beecher J. Solar concentrator of wide-angle capability. 4,266,858, Cl. 350-296.000.
Hollingsworth, Elmont E.; Shea, Wm. M.; and Spitzer, Daniel M., Jr., to Minnesota Mining and Manufacturing Company. Device for forming graphics. 4,266,863, Cl. 354-5.000.
Hollyday, Robert D., to AMP Incorporated. Stepped pin potted filter assembly. 4,267,536, Cl. 333-186.000.
Holmes, Curtis L.; Faber, William M., Sr.; Francis, Gaylord L.; and Boykin, Otis F., to CTS Corporation. Self supporting electrical resistor composed of glass, refractory materials and noble metal oxide. 4,267,074, Cl. 252-514.000.
Holmes, Francis A.; Kimblin, Clive W.; and Heberlei, Joachim V. R., to Electric Power Research Institute. Current limiter vacuum envelope. 4,267,415, Cl. 200-144.00B.
Holmes, Gordon W.; and Marykuca, William, to Red-D-Arc International Inc. Welding electrode dispenser. 4,266,690, Cl. 221-254.000.
Holmes, Tommy Lee: *See*—
Hightower, John H., 4,266,818, Cl. 293-150.000.
Holmsen, Theodore W.; Kurihara, Norman H.; and Thomas, Paul A., to Dow Chemical Company, The. Herbicide antidote compounds and method of use. 4,266,964, Cl. 71-94.000.
Homan, Gary R., to Dow Corning Corporation. Oxygen-curable mercapto-functional organosilicon-organic compound compositions possessing rapid surface reaction and method of forming higher molecular weight products therefrom. 4,267,296, Cl. 528-15.000.
Hommen, Winfried: *See*—
Schuttenberg, Eckard; Hauser, Manfred; Hommen, Winfried; and Sopha, Klaus, 4,266,572, Cl. 137-625.630.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Ban, Keisuke; and Arai, Takeo, 4,266,596, Cl. 164-97.000.
Fukui, Takeo, 4,266,787, Cl. 277-160.000.
Sato, Makoto; Ohmori, Taiji; and Tsuchiya, Yoshikazu, 4,266,833, Cl. 303-106.000.
Honda, Moriji: *See*—
Toda, Kashiku; Honda, Moriji; and Mishina, Haruhiko, 4,266,497, Cl. 114-144.00R.
Honeywell Inc.: *See*—
Crawford, Andrew B., Jr.; and Wade, Gerald J., 4,267,276, Cl. 435-291.000.
Simpson, Gary R., 4,267,434, Cl. 219-499.000.
Hong, Lai F. Watchband connector. 4,266,326, Cl. 24-265.0WS.
Hood, Ralph S. Apparatus for supporting a sail. 4,266,495, Cl. 114-106.000.
Hoof, Robert G., to Babcock & Wilcox Company, The. Labyrinth disk stack having disks with integral filter screens. 4,267,045, Cl. 210-322.000.
Hooker Chemicals & Plastics Corp.: *See*—
Annis, Myron C., 4,267,141, Cl. 264-328.100.
Hope Co., Ltd.: *See*—
Murata, Masahiro, 4,266,804, Cl. 280-605.000.
Hoppe, Gert. Protective sleeve for the handle of a dental instrument. 4,266,935, Cl. 433-116.000.
Hoppe, Lutz: *See*—
Behn, Rudolf; Hoppe, Lutz; and Bohmer, Branislav, 4,267,059, Cl. 210-736.000.
Horie, Ikutaro: *See*—
Sugimoto, Naohiko; Horie, Ikutaro; Nagao, Kameji; Yoneyama, Masakazu; Nakayama, Yasuhiro; and Yamamoto, Nobuo, 4,267,265, Cl. 430-523.000.
Horiguchi, Shojiro: *See*—
Sannan, Takanori; and Horiguchi, Shojiro, 4,267,313, Cl. 536-18.000.
Horstmann Gear Company Limited, The: *See*—
Biglin, Timothy J., 4,267,505, Cl. 324-65.00R.
Hortobagyi, Gyozo: *See*—
Dobo, Janos; Takacs, Erzsebet; Hortobagyi, Gyozo; Skvorecz nee Hajnoczy, Marianne; Kolbe, Ilona; and Hoffmann nee Vas, Katalin, 4,267,138, Cl. 264-117.000.
Hosoi, Hidetoshi: *See*—
Naito, Kazuaki; Tetekawa, Takaiki; Sogo, Shigeyuki; Higaki, Kazuhiko; Yasuoka, Tetu; and Hosoi, Hidetoshi, 4,266,885, Cl. 405-109.000.
House Food Industrial Company Limited: *See*—
Koshida, Daikichi; Sugisawa, Ko; Matsumura, Yasushi; and Taga, Kazumitsu, 4,267,199, Cl. 426-589.000.
Howell, Hilda, to Koppers Company, Inc. Polyester composition stabilized against gel-time drift with amine salt and method for making same. 4,267,279, Cl. 525-17.000.
Hribar, Allan E.: *See*—
White, Dale; Ayers, David L.; and Hribar, Allan E., 4,266,602, Cl. 165-124.000.
Hucks, Uwe: *See*—
Selbeck, Harald; Wulff, Claus; Hucks, Uwe; Tresper, Erhard; and Vernaleken, Hugo, 4,267,127, Cl. 260-973.000.
Huebner, Werner: *See*—
Motz, Herbert; Schaefer, Dieter; Huebner, Werner; and Mayer, Dieter, 4,267,203, Cl. 427-48.000.

Hughes Aircraft Company: *See*—
Pastor, Ricardo C.; Chew, Remedios K.; and Gorre, Luisa E., 4,267,205, Cl. 427-93.000.
Huhn, Helmut; and Karstens, Werner, to Bayer Aktiengesellschaft. Aqueous polymer mixture, process for its preparation and its use as substrate anchoring, blocking resistant one-coat sealing lacquer on sheet products. 4,267,094, Cl. 260-29.6RW.
Hunt, Arthur J.; and Hunt, Arthur J., Jr. Screw press with continuous slope feed screw. 4,266,473, Cl. 100-117.000.
Hunt, Arthur J., Jr.: *See*—
Hunt, Arthur J.; and Hunt, Arthur J., Jr., 4,266,473, Cl. 100-117.000.
Hunt, Harold R.: *See*—
Kraus, Gerard; and Hunt, Harold R., 4,267,160, Cl. 423-456.000.
Hutchins, Terence N.; and Meunier, Francois C., to Northern Telecom Limited. Device for organizing optical fibers and the like. 4,266,853, Cl. 350-96.200.
Hutt, Marland P., Jr.: *See*—
Haskell, Theodore H.; Hutt, Marland P., Jr.; and Nicolaides, Ernest D., 4,267,180, Cl. 424-251.000.
Hyodo, Susumu: *See*—
Kobayashi, Yoshio; Ando, Koichi; and Hyodo, Susumu, 4,267,155, Cl. 423-235.000.
Idelson, Elbert M., to Polaroid Corporation. Chrome complexed magenta dye developers. 4,267,252, Cl. 430-225.000.
Idelson, Elbert M., to Polaroid Corporation. Chrome complexed magenta dye developers. 4,267,253, Cl. 430-225.000.
Igel, Wolfgang: *See*—
Donmez, Atilla; and Igel, Wolfgang, 4,266,397, Cl. 57-261.000.
Ignatov, Jury P.: *See*—
Zuzanov, Georgy I.; Ignatov, Jury P.; and Chinenov, Sergei P., 4,266,894, Cl. 409-283.000.
Ih, Charles S., to University of Delaware. Two-dimensional scanners. 4,266,846, Cl. 350-3.710.
Ihara Chemical Industry Co., Ltd.: *See*—
Koike, Wataro; Sasuga, Tadashi; and Yazawa, Chihiro, 4,267,317, Cl. 542-416.000.
Iida, Shinya; Ueki, Kazuyoshi; Komatsu, Hideo; and Mitzutani, Tatsumi, to Hitachi, Ltd. Method for dry-etching aluminum and aluminum alloys. 4,267,013, Cl. 156-643.000.
Iida, Tetsuya; Sato, Chikara; and Suzuki, Yasoji, to Tokyo Shibaura Denki Kabushiki Kaisha. Operational amplifier. 4,267,517, Cl. 330-253.000.
Iizuka Electric Industry Company Limited: *See*—
Ishikawa, Kazuhiro, 4,266,845, Cl. 339-258.00R.
Iizuka, Hisakazu: *See*—
Shibata, Tadashi; and Iizuka, Hisakazu, 4,267,011, Cl. 156-628.000.
Ike, Yoshimasa: *See*—
Ozaki, Shoichiro; Ike, Yoshimasa; Ishikawa, Katsutoshi; and Mori, Haruki, 4,267,326, Cl. 544-313.000.
Ikeda, Masaki, to Tomy Kogyo Co., Inc. Target apparatus for ejecting articles. 4,266,777, Cl. 273-310.000.
Ikeda, Tadashi: *See*—
Ohta, Norio; Ishida, Fumihiko; Ikeda, Tadashi; Ando, Keikichi; and Sugita, Yutaka, 4,267,230, Cl. 428-336.000.
Ikenoue, Shinpei; and Masuda, Takao, to Fuji Photo Film Co., Ltd. Thermally-developable light-sensitive elements. 4,267,267, Cl. 430-533.000.
Iketani, Hiroshi, to Omron Tateisi Electronics Co. Hinge-type electromagnetic relay. 4,267,540, Cl. 335-128.000.
Illgen, Lester. Holder for a plumb bob. 4,266,347, Cl. 33-393.000.
Illinois Railway Equipment Company: *See*—
Jensen, Finn, 4,266,897, Cl. 410-113.000.
Illinois Tool Works Inc.: *See*—
Koepke, John A., 4,267,417, Cl. 200-159.00B.
Imai, Chikara: *See*—
Eda, Tadahiro; Tatsumi, Susumu; and Imai, Chikara, 4,266,870, Cl. 355-14.00D.
Imai, Ichiro; Hashimoto, Isao; Suzuki, Keiji; and Nakagawa, Hiroaki, to Mitsui Petrochemical Industries Ltd. Process for preparation of aromatic hydroperoxides. 4,267,387, Cl. 568-568.000.
Imai, Tamotsu: *See*—
Schmidt, Robert J.; and Imai, Tamotsu, 4,267,397, Cl. 568-899.000.
Imamura, Kazuo; and Minamoto, Toshio, to Daido Kogyo Co., Ltd. Steel flanged wheel rims for motorized bicycles or two-wheeled vehicles and a process for producing the rims. 4,266,417, Cl. 72-168.000.
IMC International Management Consultants, Inc.: *See*—
Bonin, Pete J., Jr.; Evans, Marion E.; and Bonin, Pete J., Sr., 4,266,537, Cl. 128-75.000.
Imperial Chemical Industries Limited: *See*—
Feasey, Ronald G.; and Griffin, Brian P., 4,267,304, Cl. 528-193.000.
Johnson, Malcolm; Mills, Stuart D.; and Phillips, Paul J., 4,267,183, Cl. 424-263.000.
Knight, Peter A.; and Tilley, Janet P., 4,267,229, Cl. 428-324.000.
Riggs, Aubrey F., 4,267,215, Cl. 427-372.200.
Inamoto, Hiroshi, to Nissan Motor Company, Limited. Weatherstrip retainer unit for automobiles and roof construction which accommodates well to installation of roof rack. 4,266,824, Cl. 296-210.000.
Incoe Corporation: *See*—
Osuna-Diaz, Jesus M., 4,266,723, Cl. 239-132.000.
Industrial Designs & Services: *See*—
Crane, Walton B., 4,266,714, Cl. 229-34.0HW.
Industrie Pirelli S.p.A.: *See*—
Gallizia, Achille, 4,266,750, Cl. 249-65.000.
Institut Francais du Petrole: *See*—
Milton, Alan, 4,266,886, Cl. 405-169.000.
Torck, Bernard; Van Landeghem, Hugo; Vu, Quang D.; and Hellin, Michel, 4,267,393, Cl. 568-697.000.
Institut National de la Recherche Agronomique: *See*—
Janin, Gerard; and Ory, Jean-Marie, 4,266,874, Cl. 356-335.000.
Institute of Applied Biology Charitable Research Trust: *See*—
Rubens, Harry E., 4,266,881, Cl. 401-32.000.
Interlake, Inc.: *See*—
Meyer, Louis H.; and Collins, Ellsworth H., 4,266,659, Cl. 198-781.000.
International Business Machines Corporation: *See*—
Bohlen, Harald; Greschner, Johann; Kulcke, Werner; and Nehmiz, Peter, 4,267,259, Cl. 430-296.000.
Boyd, Clay E.; Jones, John C.; and Mumola, Joanne L., 4,267,555, Cl. 340-748.000.
Buchanan, James C., 4,266,880, Cl. 400-550.000.
Haug, Werner; Gschwendtner, Joerg; and Schnadt, Robert, 4,267,465, Cl. 307-238.300.
Schindler, Hans R.; and Vettiger, Peter, 4,267,407, Cl. 179-15.55R.
International Flavors & Fragrances Inc.: *See*—
Mookherjee, Braja D.; Mussinan, Cynthia J.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,267,076, Cl. 252-522.00R.
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Granda, Edward J.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,267,066, Cl. 252-174.110.
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,267,067, Cl. 252-174.110.
International Shoe Machine Corporation: *See*—
Vornberger, Walter, 4,266,313, Cl. 12-54.300.
International Telephone and Telegraph Corporation: *See*—
Hernandez, Victor M., 4,267,595, Cl. 375-95.000.
Salisbury, Glenn C., 4,266,851, Cl. 350-96.150.
Schloth, Arthur P., 4,266,639, Cl. 188-311.000.
Interpace Corporation: *See*—
Hanson, Martin B., 4,267,209, Cl. 427-199.000.
Inui, Taiji: *See*—
Oki, Toshikazu; Yoshimoto, Akihiro; Inui, Taiji; Takeuchi, Tomio; and Umezawa, Hamao, 4,267,312, Cl. 536-17.00A.
Ireland, Jack W. Coating of optical lens for blocking purposes. 4,267,208, Cl. 427-154.000.
Isalski, Wieslaw H., to Petrocarbon Development Limited. Recovery of hydrogen and ammonia from purge gas. 4,266,957, Cl. 62-18.000.
Isham, Robert H.: *See*—
Petrizio, Cesare J.; and Isham, Robert H., 4,267,527, Cl. 331-111.000.
Ishida, Fumihiko: *See*—
Ohta, Norio; Ishida, Fumihiko; Ikeda, Tadashi; Ando, Keikichi; and Sugita, Yutaka, 4,267,230, Cl. 428-336.000.
Ishigaki, Kazumi, to Sakura Color Products Corporation. Package of mechanical pencil refill leads. 4,266,667, Cl. 206-469.000.
Ishiguro, Tomoji: *See*—
Nakajima, Koichi; Ishiguro, Tomoji; Okamoto, Tokuhiko; Konaka, Minoru; Nagai, Minoru; Higuchi, Kanji; and Sasaki, Kenji, 4,267,483, Cl. 313-143.000.
Ishiguro, Toshihiro: *See*—
Nohara, Akira; Ishiguro, Toshihiro; and Ukawa, Kiyoshi, 4,267,332, Cl. 546-89.000.
Ishihara Sangyo Kaisha Ltd.: *See*—
Nishiyama, Ryuzo; Kimura, Fumio; Haga, Takahiro; Sakashita, Nobuyuki; and Nishikawa, Tetsuji, 4,266,963, Cl. 71-92.000.
Nishiyama, Ryuzo; Fujikawa, Kanichi; Nasu, Rikuo; and Shigehara, Itaru, 4,267,336, Cl. 546-302.000.
Ishikawa, Katsutoshi: *See*—
Ozaki, Shoichiro; Ike, Yoshimasa; Ishikawa, Katsutoshi; and Mori, Haruki, 4,267,326, Cl. 544-313.000.
Ishikawa, Kazuhiro, to Iizuka Electric Industry Company Limited. Resilient contact member of jack for use in conjunction with a pin-plug. 4,266,845, Cl. 339-258.00R.
Ishikawa, Takashi. Architectural panel and method of making the same. 4,267,221, Cl. 428-121.000.
Ishikawa, Toshiro; Kitani, Teruo; and Baba, Takaaki, to Matsushita Electric Industrial Co., Ltd. Color television receiver for simultaneous display of plural programs. 4,267,560, Cl. 358-22.000.
Itek Corporation: *See*—
Dodge, Dennis; Matwey, Paul; Madigan, Thomas M.; and Powers, Robert H., 4,266,866, Cl. 354-84.000.
Ito, Fumio: *See*—
Shinoda, Nobuhiko; Ito, Tadashi; Ito, Fumio; Mashimo, Yukio; and Sakurada, Nobuaki, 4,267,437, Cl. 235-92.0PE.
Ito, Hiroshi: *See*—
Murakami, Katsuo; Anzai, Yoshinori; Otani, Mitsuoki; and Ito, Hiroshi, 4,267,485, Cl. 313-486.000.
Ito, Koichi: *See*—
Toyoshima, Shigeshi; Sato, Ryuichi; Ito, Koichi; Shinohara, Toshio; and Arai, Masatoshi, 4,267,172, Cl. 424-184.000.
Ito, Shiro T.: *See*—
Powell, Thomas E.; and Ito, Shiro T., 4,266,560, Cl. 130-27.00T.
Ito, Shunji: *See*—
Nitta, Minoru; Kajinaga, Yoshihiro; Sakurada, Ichio; Ogura, Kuniaki; and Ito, Shunji, 4,266,974, Cl. 75-251.000.
Ito, Tadashi: *See*—
Shinoda, Nobuhiko; Ito, Tadashi; Ito, Fumio; Mashimo, Yukio; and Sakurada, Nobuaki, 4,267,437, Cl. 235-92.0PE.

Ito, Takashi; and Hijiya, Shinpei, to Fujitsu Limited. Process for producing a semiconductor device including an ion implantation step in combination with direct thermal nitridation of the silicon substrate. 4,266,985, Cl. 148-1.500.

Ivanov, Gely M.; Novikov, Vladislav I.; and Khmelev, Vladimir V. Device for damping oscillations. 4,267,496, Cl. 318-615.000.

Ivanov, Vladimir K.: *See*—
Stoev, Stoycho M.; Sapunarov, Ivan M.; and Ivanov, Vladimir K., 4,267,046, Cl. 210-780.000.

Iwaoka, Shoji; Kaito, Hiroyuki; Anzai, Shigeo; Ushigome, Susumu; Watanabe, Yoshiaki; and Mimura, Nobuyuki, to Kawasaki Steel Corporation; and Tokyo Yogyo Kabushiki Kaisha. Method for blowing gas from below into molten steel in refining vessel. 4,266,970, Cl. 75-59.000.

Iwasaki, Motoaki: *See*—
Matsuda, Akira; Goshima, Norio; Yasuda, Shigeo; Iwasaki, Motoaki; and Nishino, Hiroshi, 4,267,546, Cl. 340-58.000.

Iwata, Toshiharu; and Hattori, Tadashi, to Nippon Soken, Inc. Ignition spark plug. 4,267,482, Cl. 313-143.000.

Iwatani, Kouji: *See*—
Nakagawa, Yuzo; Iwatani, Kouji; and Kadono, Tetsuro, 4,267,457, Cl. 250-522.000.

J.G.L. Chemicals Ltd.: *See*—
Thankachan, Chacko; Ritchie, John G.; Sahayada, Eugene; and Sengupta, Asok, 4,267,239, Cl. 428-425.100.

J. H. Stradling, Inc.: *See*—
Stradling, John H.; and Albrecht, Paul R., 4,266,643, Cl. 192-51.000.

J.I. Case Company: *See*—
Skahill, Richard J., 4,266,315, Cl. 15-250.160.

J. M. Eltzroth & Associates, Inc.: *See*—
Krippes, William D., 4,266,988, Cl. 148-6.210.

J. M. Ney Company, The: *See*—
Guzowski, Matthew M.; Schaffer, Stephen P.; and Wright, David C., 4,266,973, Cl. 75-134.00N.

Jackson, W. Shaun; and Bohm, Leslie E. Pannier mounting arrangement for cycles. 4,266,702, Cl. 224-31.000.

Jackson, Winston J., Jr.: *See*—
Olsen, Eric G.; and Jackson, Winston J., Jr., 4,267,301, Cl. 528-93.000.

Jacobsen, David O.: *See*—
Jacobsen, Merlin D.; Jacobsen, David O.; and Harrison, Claude E., 4,266,898, Cl. 414-24.500.

Jacobsen, Merlin D.; Jacobsen, David O.; and Harrison, Claude E., to H & J Sales. Bale carrier. 4,266,898, Cl. 414-24.500.

Jaffe, Stephen B., to Mobil Oil Corporation. Catalyst for hydrotreating residual petroleum oil. 4,267,071, Cl. 252-439.000.

Jagenberg Werke AG: *See*—
Schonmeier, Herbert, 4,266,736, Cl. 242-66.000.

Jaisle, Richard F.; and Bunkowski, Kenneth D., to Formica Corporation. Release sheets and process of use. 4,267,240, Cl. 428-484.000.

Jamshidi, Khosrow. Biopsy needle with stylet and cannula orientation. 4,266,555, Cl. 128-753.000.

Janin, Gerard; and Ory, Jean-Marie, to Institut National de la Recherche Agronomique. Apparatus and method for measuring the size of fibers. 4,266,874, Cl. 356-335.000.

Janome Sewing Machine Co., Ltd.: *See*—
Hanyu, Susumu; and Tonomura, Yoshinobu, 4,266,493, Cl. 112-158.00E.

Jansen, Harvey B.: *See*—
Sumegi, Robert B.; Woodhouse, Geoffrey D.; Mattson, George B.; Jansen, Harvey B.; Bolliger, Frederic E.; and Hatch, Robert A., 4,266,401, Cl. 60-39.16R.

Janssen Pharmaceutica, N.V.: *See*—
Heeres, Jan; and Backx, Leo J. J., 4,267,179, Cl. 424-25.00D.

Janssen, Theodorus M.; Gilissen, Hermanus P. J.; Soes, Lucas; Van Der Sanden, Ludovicus C.; and Van Dijk, Petrus R. M., to AMP Incorporated. Electrical switch. 4,267,412, Cl. 200-6.00B.

Japanese National Railways: *See*—
Katoh, Yasuo; Kakegawa, Hideo; Hayashi, Shigeyuki; and Yamashita, Tadakazu, 4,267,085, Cl. 260-28.5AS.

Jarvinen Uro T. Device for preventing unauthorized use of a firearm. 4,266,356, Cl. 42-1.0LP.

Jautelat, Manfred; Stetter, Jorg; Arlt, Dieter; and Kramer, Wolfgang, to Bayer Aktiengesellschaft. Preparation of side-chain fluorinated 3,3-dimethyl-butan-2-one. 4,267,381, Cl. 568-419.000.

Jecminek, Albert A.: *See*—
Nielsen, Robert P.; and Jecminek, Albert A., 4,267,073, Cl. 252-455.00R.

Jefferson Industries Company, The: *See*—
Stanley, Glen L., 4,266,309, Cl. 6-12.00R.

Jenkins, Jack L., to United States of America, Navy. Heat exchanger for contaminated water. 4,266,601, Cl. 165-94.000.

Jennings, C. Michael; Kitchenham, Albert; and Lamadrid, Rene, to Baxter Travenol Laboratories, Inc. Platen, holder and latch assembly for securing platens in place within a centrifuge device. 4,266,717, Cl. 233-26.000.

Jensen, Finn, to Illinois Railway Equipment Company. Lading tie anchor. 4,266,897, Cl. 410-113.000.

Jersey Nuclear-Avco Isotopes, Inc.: *See*—
Avicola, Kenneth, 4,266,854, Cl. 350-171.000.

Jezorek, Leigh; Pitel, Irving; and Silverman, Richard, to Kelleigh Corporation. Method and apparatus for brominating tacky surfaces of a photopolymer article. 4,267,214, Cl. 427-341.000.

Jochums, Peter; Stratmann, Klaus; Henkel, Egon; and Wildfurster, Heinrich, to Hauhinco Maschinenfabrik G. Hausherr, Jochums & Co. KG. Rack-rail assembly for a mining machine. 4,266,484, Cl. 105-29.00R.

Joergensen, Ole, to Ole Joergensen. Fishing-tackle to be used as a combined jig and spinner. 4,266,361, Cl. 43-42.460.

Johansen, David K.: *See*—
Bourke, Robert F.; and Johansen, David K., 4,267,500, Cl. 318-806.000.

Johns-Manville Corporation: *See*—
McClure, Thomas D., 4,267,056, Cl. 210-678.000.

Johnson, Bertrand H.; and Paola, Carl R., to Bell Telephone Laboratories, Incorporated. Low thermal impedance light-emitting diode package. 4,267,559, Cl. 357-81.000.

Johnson, Craig E.: *See*—
Henderson, Larry D.; and Johnson, Craig E., 4,267,132, Cl. 264-3.00B.

Johnson, David W., Jr.; and Vogel, Eva M., to Bell Telephone Laboratories, Incorporated. Dispersants for a ceramic slurry. 4,267,065, Cl. 252-62.620.

Johnson, J. Peter. Glass etching device. 4,266,378, Cl. 51-432.000.

Johnson, Malcolm; Mills, Stuart D.; and Phillips, Paul J., to Imperial Chemical Industries Limited. Tetrahydropyridine derivative. 4,267,183, Cl. 424-263.000.

Johnson, Robert A., to Graham Magnetics, Inc. Process of making high-temperature magnetic tape. 4,267,206, Cl. 427-128.000.

Johnson, Ronald E.: *See*—
Dix, James F.; Ford, Clarence E., Jr.; Forker, Ray B., Jr.; and Johnson, Ronald E., 4,267,000, Cl. 156-235.000.

Johnson, Stephen A., to MCC Flowseal, a unit of Mark Controls Corporation. Seal structure. 4,266,752, Cl. 251-173.000.

Johnston, Ian F. Food from non-edible fruit by-products and method for production. 4,267,196, Cl. 426-49.000.

Johnstone, Charles W., to Schlumberger Technology Corp. Methods and apparatus for measuring thermal neutron decay characteristics of earth formations. 4,267,447, Cl. 250-262.000.

Jones, Harold D. Pipe hanger. 4,266,745, Cl. 248-58.000.

Jones, John C.: *See*—
Boyd, Clay E.; Jones, John C.; and Mumola, Joanne L., 4,267,555, Cl. 340-748.000.

Jones & Laughlin Steel Corporation: *See*—
Koros, Peter J. M., 4,266,969, Cl. 75-58.000.

Jones, Richard A.; and Witenhafer, Donald E., to B. F. Goodrich Company, The. Process for coating reactors using organic compound vapor application. 4,267,291, Cl. 526-62.000.

Jorgensen, Allen R.: *See*—
Leanna, Dale D.; and Jorgensen, Allen R., 4,266,735, Cl. 242-56.00A.

Josephson, Lee, to Baxter Travenol Laboratories, Inc. Prostatic acid phosphatase immuno assay. 4,267,272, Cl. 435-7.000.

Joubert, Jerauld D.: *See*—
Garner, Fay T.; and Joubert, Jerauld D., 4,266,625, Cl. 180-6.480.

Juergens, Dieter C., to Harnischfeger Corporation. Convertible boom machine having modular bottom portion. 4,266,679, Cl. 212-181.000.

Jugl, Herbert F.: *See*—
Leonard, Murray; and Jugl, Herbert F., 4,266,930, Cl. 431-263.000.

Jung, Michel: *See*—
Metcalf, Brian W.; Jung, Michel; and Danzin, Charles, 4,267,374, Cl. 564-509.000.

Jurca, Joseph A., to Bunker Ramo Corporation. Hover control system for a submersible buoy. 4,266,500, Cl. 114-333.000.

Kaae, James L.; Reynolds, George H.; Sterling, Stewart A.; and Yang, Ling, to General Atomic Company. Nuclear fuel particles. 4,267,019, Cl. 176-82.000.

Kabushiki Kaisha Morita Seisakusho: *See*—
Matsui, Takahiro; and Saito, Yoshio, 4,266,760, Cl. 269-323.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Hasegawa, Junzo; Kawabata, Susumu; Niimi, Hiroshi; Suzuki, Yasuhiko; Akatsuka, Masaki; and Tsunekawa, Takahiko, 4,266,324, Cl. 19-239.000.

Kabushiki Kaisha Toyota Chuo: *See*—
Nakajima, Koichi; Ishiguro, Tomoji; Okamoto, Tokuhiko; Konaka, Minoru; Nagai, Minoru; Higuchi, Kanji; and Sasaki, Kenji, 4,267,483, Cl. 313-143.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
Hasegawa, Junzo; Kawabata, Susumu; Niimi, Hiroshi; Suzuki, Yasuhiko; Akatsuka, Masaki; and Tsunekawa, Takahiko, 4,266,324, Cl. 19-239.000.

Kacal, Gary W.; and Partridge, Charles C., to ACF Industries, Incorporated. Spring assembly for floating seat ring. 4,266,566, Cl. 137-316.000.

Kadono, Tetsuro: *See*—
Nakagawa, Yuzo; Iwatani, Kouji; and Kadono, Tetsuro, 4,267,457, Cl. 250-522.000.

Kadota, Kenji: *See*—
Yamada, Yasuteru; and Kadota, Kenji, 4,266,967, Cl. 75-36.000.

Kageyama, Minoru: *See*—
Hayashi, Torahiko; Kageyama, Minoru; and Morikawa, Michio, 4,266,920, Cl. 425-133.100.

Kahmann, Gottfried: *See*—
Schneider, Manfred; Kahmann, Gottfried; Gohler, Wolfgang; and Kircheiss, Andreas, 4,266,410, Cl. 66-84.00R.

Kaiser, Karl: *See*—
Kuxdorf, Bernhard; Wissel, Kurt; and Kaiser, Karl, 4,266,949, Cl. 55-186.000.

Kaiser, Reinhard; and Steffan, Guido, to Bayer Aktiengesellschaft. Process for the preparation of 1,2,4-triazole. 4,267,346, Cl. 548-262.000.

Kaito, Hiroyuki: *See*—
Iwaoka, Shoji; Kaito, Hiroyuki; Anzai, Shigeo; Ushigome, Susumu; Watanabe, Yoshiaki; and Mimura, Nobuyuki, 4,266,970, Cl. 75-59.000.

Kajinaga, Yoshihiro: *See*—
Nitta, Minoru; Kajinaga, Yoshihiro; Sakurada, Ichio; Ogura, Kuniaki; and Ito, Shunji, 4,266,974, Cl. 75-251.000.

Kakegawa, Hideo: *See*—
Katoh, Yasuo; Kakegawa, Hideo; Hayashi, Shigeyuki; and Yamashita, Tadakazu, 4,267,085, Cl. 260-28.5AS.

Kalinichev, Alexandr E.: *See*—
Birjukov, Mikhail N.; Maslov, Gennady N.; Smorodinnikov, Vladimir P.; Kulikov, Anatoly P.; Udilova, Ida G.; Zuev, Vladimir K.; Lukyanov, Anatoly A.; Tolstopyatov, Konstantin S.; Kalinichev, Alexandr E.; and Zhabin, Ivan Y., 4,266,922, Cl. 425-182.000.

Kalt, Charles G., to Dielectric Systems International, Inc. Method for making rolling electrode for electrostatic device. 4,266,339, Cl. 29-829.000.

Kamin, Arthur: *See*—
Mitchell, Wallace F.; and Kamin, Arthur, 4,266,454, Cl. 82-1.00C.

Kamishita, Kazuhiko: *See*—
Kamishita, Takuzo; and Kamishita, Kazuhiko, 4,267,169, Cl. 424-78.000.

Kamishita, Takuzo; and Kamishita, Kazuhiko, to Toko Yakuhin Kogyo Kabushiki Kaisha. Novel preparation of clotrimazole. 4,267,169, Cl. 424-78.000.

Kamiya, Takashi; Teraji, Tsutomu; Nakai, Yoshiharu; Sakane, Kazuo; and Goto, Jiro, to Fujisawa Pharmaceutical Co., Ltd. Amino or acylamino-substituted pyrimidinyl cephalosporanic acid derivatives and pharmaceutical compositions thereof. 4,267,176, Cl. 424-246.000.

Kamiya, Takashi; Saito, Yoshihisa; Teraji, Tsutomu; Nakaguti, Osamu; and Oku, Teruo, to Fujisawa Pharmaceutical Co., Ltd. Disulfide substituted oxazetidine derivatives. 4,267,340, Cl. 548-187.000.

Kampe, Wolfgang: *See*—
Berger, Herbert; Gall, Rudi; Kampe, Wolfgang; Bicker, Uwe; and Kuhn, Rolf, 4,267,174, Cl. 424-244.000.

Kane, Bernard J.; and Von Genk, Richard A., to SCM Corporation. Cyclic terpenoid amines, their preparation and uses. 4,267,366, Cl. 560-231.000.

Kaneko, Takushi; Essery, John M.; Schmitz, Henry; and Doyle, Terrence W., to Bristol-Myers Company. Antitumor agents. 4,267,113, Cl. 260-345.200.

Kanematsu, Tetsuo; and Taki, Tsuneo, to Murata Manufacturing Co., Ltd. Electro-conductive elastomeric pad for piezoelectric device. 4,267,480, Cl. 310-366.000.

Kansai Paint Co., Ltd.: *See*—
Nakayama, Hiroyuki; and Nezu, Tsuguo, 4,267,202, Cl. 427-40.000.

Kanthal Corporation, The: *See*—
Best, Albert B., 4,267,435, Cl. 219-552.000.

Kanzelberger, James C., to Contemporary, Inc. Plastic material for simulating engraved metal plates. 4,267,224, Cl. 428-216.000.

Kao Soap Co., Ltd.: *See*—
Niimi, Yukihisa; and Saegusa, Katsumi, 4,267,077, Cl. 252-545.000.

Karch, John A.: *See*—
Burk, Emmett H., Jr.; Yoo, Jin S.; Karch, John A.; and Sun, Jui-Yuan, 4,267,032, Cl. 208-113.000.

Karg Corporation: *See*—
Molitors, Thomas J., 4,266,461, Cl. 87-29.000.

Karino, Yukio; Sakaguchi, Shinji; and Sakakibara, Yoshio, to Fuji Photo Film Co., Ltd. Color diffusion transfer photographic elements comprising a neutralizing system timing layer. 4,267,262, Cl. 430-463.000.

Karl Merz Maschinenfabrik: *See*—
Merz, Karlheinz; and Ulrich, Roland, 4,267,037, Cl. 209-481.000.

Karlsson, Jon. Constructional member for buildings. 4,266,387, Cl. 52-731.000.

Karmel, Paul R., to Communications Satellite Corporation. Right circular cylindrical sector cavity filter. 4,267,537, Cl. 333-231.000.

Karn, Donald L.; and Makley, James A., to Monarch Marking Systems, Inc. Label printing apparatus. 4,267,006, Cl. 156-384.000.

Karn, Jack L., to Lubrizol Corporation, The. Molybdenum-containing compositions and lubricants and fuels containing them. 4,266,945, Cl. 44-68.000.

Karol, Frederick J.: *See*—
Goeke, George L.; and Karol, Frederick J., 4,267,309, Cl. 528-413.000.

Karpinsky, John R.; and Moore, Thomas G. Color video display for audio signals. 4,267,561, Cl. 358-82.000.

Karstens, Werner: *See*—
Huhn, Helmut; and Karstens, Werner, 4,267,094, Cl. 260-29.6RW.

Kasahara, Nobuo: *See*—
Nakahara, Tosio; Yano, Hidetoshi; and Kasahara, Nobuo, 4,267,201, Cl. 427-27.000.

Kasey, Michael K., to Echlin Manufacturing Company, The. Fixtures and methods for dynamo servicing. 4,266,336, Cl. 29-596.000.

Katadyn Produkte AG: *See*—
Keller, Hans U., 4,267,455, Cl. 250-431.000.

Kataoka, Kouji: *See*—
Chudo, Akira; Sugi, Tomomitsu; and Kataoka, Kouji, 4,266,980, Cl. 106-97.000.

Kato, Hirohisa: *See*—
Matsumoto, Shoichi; Kato, Hirohisa; and Wada, Yusuke, 4,266,335, Cl. 29-592.00R.

Kato, Kyosuke. Device for preventing oil splashing and fire occurrence in frying pan. 4,266,527, Cl. 126-299.00C.

Kato, Toshitake, to Citizen Watch Co., Ltd. Mounting clips for thickness shear piezoelectric oscillator. 4,267,479, Cl. 310-348.000.

Katoh, Yasuo; Kakegawa, Hideo; Hayashi, Shigeyuki; and Yamashita, Tadakazu, to Japanese National Railways; and Nippon Oil Company, Ltd. Injection materials for railroad track beds. 4,267,085, Cl. 260-28.5AS.

Katzman, Allison W.: *See*—
Kuna, Wayne A.; Katzman, Allison W.; and Terzian, Rouben T., 4,266,367, Cl. 46-149.000.

Kaufmann, Karl-Heinz: *See*—
Breuer, Wolfram; Becker, Wolf-Jurgen; Deprez, Jacques; Drope, Eckard; Kaufmann, Karl-Heinz; and Schreckling, Kurt, 4,267,030, Cl. 204-278.000.

Kavaloski, Peter P.; and Hale, Thomas K., to Lockheed Corporation. Wheelchair for transportation vehicles. 4,266,305, Cl. 4-480.000.

Kawabata, Susumu: *See*—
Hasegawa, Junzo; Kawabata, Susumu; Niimi, Hiroshi; Suzuki, Yasuhiko; Akatsuka, Masaki; and Tsunekawa, Takahiko, 4,266,324, Cl. 19-239.000.

Kawakami, Kazuhiko; and Sugiura, Noboru, to Hitachi, Ltd. Rotational angle detecting apparatus. 4,267,470, Cl. 307-515.000.

Kawanishi, Shozo; and Yamanaka, Masami, to Yamato Scale Company, Limited. Price calculating balance with aimed price input. 4,266,623, Cl. 177-25.000.

Kawasaki Steel Corporation: *See*—
Iwaoka, Shoji; Kaito, Hiroyuki; Anzai, Shigeo; Ushigome, Susumu; Watanabe, Yoshiaki; and Mimura, Nobuyuki, 4,266,970, Cl. 75-59.000.
Nitta, Minoru; Kajinaga, Yoshihiro; Sakurada, Ichio; Ogura, Kuniaki; and Ito, Shunji, 4,266,974, Cl. 75-251.000.
Shinohara, Yoshiaki, 4,266,932, Cl. 432-194.000.

Kawatani, Kimio: *See*—
Okumichi, Toshiharu; and Kawatani, Kimio, 4,267,099, Cl. 260-101.000.

Keene Corporation: *See*—
Sellinger, Martin S., 4,266,683, Cl. 220-3.200.

Kelleigh Corporation: *See*—
Jezorek, Leigh; Pitel, Irving; and Silverman, Richard, 4,267,214, Cl. 427-341.000.

Keller, Guenter; Pohl, Andreas; and Hintz, Gerhard, to Carl Schenck AG. Differential pressure limiting valve. 4,266,467, Cl. 91-437.000.

Keller, Hans U., to Katadyn Produkte AG. Purification apparatus. 4,267,455, Cl. 250-431.000.

Kelley, Robert B.: *See*—
Birk, John R.; Kelley, Robert B.; and Tella, Richard P., 4,266,905, Cl. 414-627.000.

Kelley, Wendell W., to United States of America, National Aeronautics and Space Administration. Pitch attitude stabilization system utilizing engine pressure ratio feedback signals. 4,266,743, Cl. 244-182.000.

Kellogg, Charles W. Winding apparatus for the manufacture of filament-wound, reinforced resinous products. 4,267,007, Cl. 156-425.000.

Kelly, John F.: *See*—
Dixon, Roy P.; and Kelly, John F., 4,266,664, Cl. 206-349.000.

Kempf, Paul S., to Kempf, Paul S., Trustee or Successor Trustee. Solvent resistant inks and coatings. 4,267,088, Cl. 260-29.2EP.

Kempf, Paul S., Trustee or Successor Trustee: *See*—
Kempf, Paul S., 4,267,088, Cl. 260-29.2EP.

Kendall Company, The: *See*—
Merry, Jack D., 4,266,557, Cl. 128-763.000.

Kennecott Copper Corporation: *See*—
Wang, Chih-Chung, 4,266,987, Cl. 148-6.300.

Kennedy, George S. Contoured welding rod. 4,267,428, Cl. 219-145.100.

Kerr, Charles E.: *See*—
Balch, Robert A.; and Kerr, Charles E., 4,266,457, Cl. 83-745.000.

Kersting, Elmar; and Niessen, Heinz J., to Bayer Aktiengesellschaft. Drift reducing agricultural compositions. 4,266,962, Cl. 71-90.000.

Kessmar, Leo R., to Dana Corporation. Transmission shift control. 4,266,438, Cl. 74-473.0R.

Ketterer, Stanley J., to Singer Company, The. Anti-haloing throat plate. 4,266,494, Cl. 112-184.000.

Key Tronic Corporation: *See*—
Thomas, Robert J.; and Piekarski, Michael, 4,267,439, Cl. 235-454.000.

Kezuka, Teruo: *See*—
Yoritomi, Kenzaburo; Kezuka, Teruo; and Moriya, Mitsumasa, 4,267,054, Cl. 210-659.000.

Khmelev, Vladimir V.: *See*—
Ivanov, Gely M.; Novikov, Vladislav I.; and Khmelev, Vladimir V., 4,267,496, Cl. 318-615.000.

Kieboom, Arnoldus M. C.; and Dedding, Nicolaas P., to U.S. Philips Corporation. Radiation detection device having reflective cover layers of $BaSO_4$ incorporated in acrylic varnish. 4,267,453, Cl. 250-368.000.

Kiehs, Karl: *See*—
Buerstinghaus, Rainer; Koenig, Karl-Heinz; and Kiehs, Karl, 4,267,121, Cl. 260-465.400.

Kiepe, Paul E. Installation circuitry for electric water heaters. 4,267,432, Cl. 219-328.000.

Kikuchi, Kenichi: *See*—
Hayashi, Shinjiro; Taniyama, Kiyoshi; Kikuchi, Kenichi; and Akashi, Teruo, 4,266,439, Cl. 74-501.00R.

Kikuchi, Makoto; and Ohtsu, Ikuo, to Toyoda-Koki Kabushiki Kaisha. Tailstock device. 4,266,377, Cl. 51-262.00T.

Kiliman, D. A.: *See*—
Wissel, F. A.; and Kiliman, D. A., 4,267,591, Cl. 370-11.000.
Kimberly-Clark Corporation: *See*—
Roland, David R.; and Wollangk, Edward G., 4,266,546, Cl. 128-285.000.
Kimblin, Clive W.: *See*—
Holmes, Francis A.; Kimblin, Clive W.; and Heberlei, Joachim V. R., 4,267,415, Cl. 200-144.00B.
Kimerling, Lionel C.: *See*—
Benton, Janet L.; Doherty, Charles J.; Kimerling, Lionel C.; and Leamy, Harry J., 4,266,986, Cl. 148-1.500.
Kimsey, Thomas H., to United States of America, Air Force. Digital phase-frequency detector. 4,267,514, Cl. 328-133.000.
Kimura, Fumio: *See*—
Nishiyama, Ryuzo; Kimura, Fumio; Haga, Takahiro; Sakashita, Nobuyuki; and Nishikawa, Tetsuji, 4,266,963, Cl. 71-92.000.
Kimura, Hiroaki. Laser scalpel. 4,266,549, Cl. 128-303.100.
Kimura, Tsutomu; and Ohnishi, Masahiro, to Fuji Photo Film Co., Ltd. Format-information synthesizing system. 4,267,548, Cl. 340-146.3AH.
Kindscher, Wolfgang: *See*—
Thil, Lucien; Fischer, Martin; and Kindscher, Wolfgang, 4,267,122, Cl. 260-501.120.
King, Randall N.: *See*—
Park, Dong-Sil;; Breiter, Manfred W.; and King, Randall N., 4,266,712, Cl. 228-175.000.
Kinnard, William D.: *See*—
Stone, Arnold F.; and Kinnard, William D., 4,267,228, Cl. 428-297.000.
Kircheiss, Andreas: *See*—
Schneider, Manfred; Kahmann, Gottfried; Gohler, Wolfgang; and Kircheiss, Andreas, 4,266,410, Cl. 66-84.00R.
Kirk, Chester E.; and Raab, Owen E. Spindle turning tool. 4,266,583, Cl. 142-56.000.
Kirkwood, Robert E. Corner fence post clip. 4,266,757, Cl. 256-65.000.
Kishida, Mitsuhiro, to Mitsubishi Denki Kabushiki Kaisha. Seismic bushing. 4,267,400, Cl. 174-31.00R.
Kitagawa, Yukio: *See*—
Kobayashi, Ichiro; Moriya, Yoshiaki; and Kitagawa, Yukio, 4,267,581, Cl. 364-900.000.
Kitai, Kiyoshi; Nagaoka, Shinji; and Takazawa, Yuzuru, to Seiko Koki Kabushiki Kaisha. Focus detecting system. 4,267,440, Cl. 250-201.000.
Kitakohji, Toshisuke: *See*—
Yoneda, Yasuhiro; Kitamura, Kenro; Naito, Jiro; and Kitakohji, Toshisuke, 4,267,258, Cl. 430-270.000.
Kitamoto, Tatsuji: *See*—
Sasazawa, Koji; Kitamoto, Tatsuji; Akashi, Goro; Masaki, Kouichi; and Dezawa, Shinichiro, 4,267,207, Cl. 427-129.000.
Kitamura, Kenro: *See*—
Yoneda, Yasuhiro; Kitamura, Kenro; Naito, Jiro; and Kitakohji, Toshisuke, 4,267,258, Cl. 430-270.000.
Kitani, Teruo: *See*—
Ishikawa, Toshiro; Kitani, Teruo; and Baba, Takaaki, 4,267,560, Cl. 358-22.000.
Kitazawa, Yoichi; Sato, Takeshi; and Tsuji, Hisao, to Bridgestone Tire Company Limited. Light weight pneumatic tire having a thin side wall rubber. 4,266,995, Cl. 156-123.00R.
Kitchen, Alonzo G., to Phillips Petroleum Company. Tough, transparent articles from styrene polymers blended with certain block-random copolymers. 4,267,284, Cl. 525-99.000.
Kitchenham, Albert: *See*—
Jennings, C. Michael; Kitchenham, Albert; and Lamadrid, Rene, 4,266,717, Cl. 233-26.000.
Kite, George F.: *See*—
Merritt, Henry B.; and Kite, George F., 4,266,562, Cl. 131-293.000.
Kiwala, Jacob: *See*—
Mookherjee, Braja D.; Mussinan, Cynthia J.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,267,076, Cl. 252-522.00R.
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Granda, Edward J.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,267,066, Cl. 252-174.110.
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,267,067, Cl. 252-174.110.
Klaiber, William C. Paint brush, pad and roller holder and can carrier. 4,266,746, Cl. 248-113.000.
Kleiner, Hans-Jerg: *See*—
Dursch, Walter; and Kleiner, Hans-Jerg, 4,267,125, Cl. 260-545.00P.
Klemmer, Paul J.: *See*—
Lamon, David E.; and Klemmer, Paul J., 4,266,475, Cl. 100-168.000.
Kleven, Jonny H. Apparatus and method for separating free metal from ore. 4,267,036, Cl. 209-444.000.
Klien, Caren A.; and Gieseker, Donald R., to Procter & Gamble Company, The. Aggregated mixed-moisture flaked coffee of high aroma. 4,267,200, Cl. 426-595.000.
Klimowicz, Jerome R. Multiple piece bolt-type fastener. 4,266,460, Cl. 85-9.00R.
Klockner-Humboldt-Deutz AG: *See*—
Bender, Hans; Graf, Rupprecht; Unkelbach, Karl-Heinz; and Zabel, Wolf, 4,266,982, Cl. 134-18.000.
Knepper, Larimer J.; McDuffie, James W.; and Wagstaff, Robert A., to Sperry Corporation. Header cutting angle adjustment mechanism. 4,266,392, Cl. 56-14.500.
Knepper, Larimer J.: *See*—
McDuffie, James W.; Knepper, Larimer J.; and Knipper, Larimer J., 4,266,391, Cl. 56-14.500.
Knight, Peter A.; and Tilley, Janet P., to Imperial Chemical Industries Limited. Decorative acrylic sheets and articles formed therefrom. 4,267,229, Cl. 428-324.000.
Knipper, Larimer J.: *See*—
McDuffie, James W.; Knepper, Larimer J.; and Knipper, Larimer J., 4,266,391, Cl. 56-14.500.
Knis, Stephen A.: *See*—
Kolakowski, Richard A.; and Knis, Stephen A., 4,267,134, Cl. 264-46.200.
Knops, Hans-Joachim; Heine, Hans-Georg; Draber, Wilfried; and Brandes, Wilhelm, to Bayer Aktiengesellschaft. Combating fungi with substituted spiro-derivatives of 3-(3,5-dihalogenophenyl)-oxazolidine-2,4-diones (thione-ones). 4,267,186, Cl. 424-272.000.
Knupp, Mary R.; and Tymkewicz, John, to Knupp, Mary R. Cake trimming and icing levelling and smoothing means. 4,266,501, Cl. 118-15.000.
Kobayashi, Ichiro; Moriya, Yoshiaki; and Kitagawa, Yukio, to Tokyo Shibaura Denki Kabushiki Kaisha. Memory address designating system. 4,267,581, Cl. 364-900.000.
Kobayashi, Kozo: *See*—
Terui, Nobuo; and Kobayashi, Kozo, 4,267,515, Cl. 328-147.000.
Kobayashi, Tatuo; and Yamada, Nobuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Variable venturi type carburetor. 4,267,128, Cl. 261-44.00C.
Kobayashi, Yoshio; Ando, Koichi; and Hyodo, Susumu, to Mitsubishi Kakoki Kaisha Ltd. Process for cleaning flue gas. 4,267,155, Cl. 423-235.000.
Kobylinski, Thaddeus P.: *See*—
Austin, Richard G.; Pretzer, Wayne R.; and Kobylinski, Thaddeus P., 4,267,379, Cl. 568-385.000.
Austin, Richard G.; Pretzer, Wayne R.; and Kobylinski, Thaddeus P., 4,267,380, Cl. 568-385.000.
Koch, Robert C.: *See*—
Davis, James A.; and Koch, Robert C., 4,267,079, Cl. 260-3.500.
Kodama, Yoshiki: *See*—
Uemura, Tamio; and Kodama, Yoshiki, 4,266,790, Cl. 280-6.100.
Kodera, Yoshiaki; Watanabe, Kiyoyuki; and Kusu, Takayuki, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Agricultural covering film or sheet and method for thermal insulation. 4,266,370, Cl. 47-29.000.
Koenig, Horst: *See*—
Frickel, Fritz-Frieder; Franke, Albrecht; Koenig, Horst; Lenke, Hans-Dieter; and Gries, Josef, 4,267,187, Cl. 424-274.000.
Koenig, Karl-Heinz: *See*—
Buerstinghaus, Rainer; Koenig, Karl-Heinz; and Kiehs, Karl, 4,267,121, Cl. 260-465.400.
Koepke, John A., to Illinois Tool Works Inc. Membrane keyswitch. 4,267,417, Cl. 200-159.00B.
Kohler, Ernst; and Moninger, Friedrich, to Wurttembergische Filztuchfabrik. Fabric web and a method of making a fabric web for a dewatering machine. 4,267,226, Cl. 428-223.000.
Kohler, Rolf-Dieter: *See*—
Hagen, Helmut; and Kohler, Rolf-Dieter, 4,267,349, Cl. 548-339.000.
Kohmura, Tamotsu; and Yoshimine, Jun-ichi, to Sankin Industry Co., Ltd. Manufacture of denture base. 4,267,133, Cl. 264-18.000.
Kohrn, Edward L.; and Globus, Seymour. Flush tank water saver. 4,266,304, Cl. 4-415.000.
Koike, Wataro; Sasuga, Tadashi; and Yazawa, Chihiro, to Ihara Chemical Industry Co., Ltd. Process for producing phenoxyalkene derivative. 4,267,317, Cl. 542-416.000.
Kolakowski, Richard A.; and Knis, Stephen A., to Upjohn Company, The. Method and apparatus for smoothing foamed plastic core panelboard surface. 4,267,134, Cl. 264-46.200.
Kolakowski, Richard A.: *See*—
Stroud, Richard M.; and Kolakowski, Richard A., 4,267,135, Cl. 264-51.000.
Kolbe, Ilona: *See*—
Dobo, Janos; Takacs, Erzsebet; Hortobagyi, Gyozo; Skvorecz nee Hajnoczy, Marianne; Kolbe, Ilona; and Hoffmann nee Vas, Katalin, 4,267,138, Cl. 264-117.000.
Kollmeier, Hans-Joachim: *See*—
Lidy, Werner; Rossmy, Gerd; and Kollmeier, Hans-Joachim, 4,267,078, Cl. 260-2.300.
Koltun, Ronald E.: *See*—
Garbe, Reinhold F.; Esterl, Leo A.; and Koltun, Ronald E., 4,266,996, Cl. 156-154.000.
Komatsu, Hideo: *See*—
Iida, Shinya; Ueki, Kazuyoshi; Komatsu, Hideo; and Mitzutani, Tatsumi, 4,267,013, Cl. 156-643.000.
Komatsu, Tadaaki: *See*—
Ozawa, Masahiro; Komatsu, Tadaaki; and Matsuoka, Kimiaki, 4,267,360, Cl. 560-111.000.
Komiya, Osamu, to Olympus Optical Co., Ltd. Laser knife. 4,266,547, Cl. 128-303.100.
Konaka, Minoru: *See*—
Nakajima, Koichi; Ishiguro, Tomoji; Okamoto, Tokuhiko; Konaka, Minoru; Nagai, Minoru; Higuchi, Kanji; and Sasaki, Kenji, 4,267,483, Cl. 313-143.000.
Kondo, Masahiko, to V.I.V. Engineering Co., Ltd. Braking device. 4,266,635, Cl. 188-82.840.
Kondo, Yoshiteru, to USM Corporation. Stud welding apparatus. 4,267,425, Cl. 219-98.000.

Kongo Co., Ltd.: *See*—
Taniwaki, Genshi, 4,266,372, Cl. 49-358.000.
Konig, Klaus; Schreckenberg, Manfred; Lindner, Christian; Suling, Carlhans; and Freitag, Dieter, to Bayer Aktiengesellschaft. Process for the preparation of polymers with diphenol carbonate end groups. 4,267,303, Cl. 528-171.000.
Konishiroku Photo Industry Co., Ltd.: *See*—
Shibue, Toshiaki; and Nagayasu, Koichi, 4,267,266, Cl. 430-530.000.
Koppers Company, Inc.: *See*—
Howell, Hilda, 4,267,279, Cl. 525-17.000.
Leston, Gerd, 4,267,389, Cl. 568-750.000.
Leston, Gerd, 4,267,390, Cl. 568-751.000.
Leston, Gerd, 4,267,391, Cl. 568-751.000.
Leston, Gerd, 4,267,392, Cl. 568-751.000.
Korb, Donald R.: *See*—
Gallop, Paul M.; and Korb, Donald R., 4,267,295, Cl. 526-264.000.
Korf, Heinz L., to Rapco Foam, Inc. Method of producing urea-formaldehyde resin and foam having reduced formaldehyde emission. 4,267,277, Cl. 521-103.000.
Koros, Peter J. M., to Jones & Laughlin Steel Corporation. Desulfurization process. 4,266,969, Cl. 75-58.000.
Koshida, Daikichi; Sugisawa, Ko; Matsumura, Yasushi; and Taga, Kazumitsu, to House Food Industrial Company Limited. Noodle soup mix. 4,267,199, Cl. 426-589.000.
Kouchi, Toshihiro: *See*—
Nishibayashi, Katsumi; Amagai, Yoshimi; Hikake, Norio; Kouchi, Toshihiro; and Aizawa, Tatsuo, 4,267,246, Cl. 430-98.000.
Kovacs, Karoly G.: *See*—
Halstrom, John B.; and Kovacs, Karoly G., 4,267,344, Cl. 548-227.000.
Kowitz, Friedrich: *See*—
Lindner, Christian; Arnold, Bernhard; Kuhlmann, Dieter; Kowitz, Friedrich; and Ott, Karl-Heinz, 4,267,278, Cl. 525-2.000.
Koyama, Takahiro: *See*—
Sato, Kazuo; Asahi, Akira; and Koyama, Takahiro, 4,267,198, Cl. 426-332.000.
Koyanagi, Masaru: *See*—
Nomura, Hiroki; Mafune, Masao; and Koyanagi, Masaru, 4,267,427, Cl. 219-121.0LL.
Kramer-Werke GmbH: *See*—
Friedrich, Karl, 4,266,629, Cl. 180-252.000.
Kramer, William E.; and Malinowski, Frank P., to Xerox Corporation. Sheet alignment and feeding apparatus. 4,266,762, Cl. 271-225.000.
Kramer, Wolfgang: *See*—
Jautelat, Manfred; Stetter, Jorg; Arlt, Dieter; and Kramer, Wolfgang, 4,267,381, Cl. 568-419.000.
Kranzler, Ernst: *See*—
Wahl, Gunter; Kuhlmann, Gerhard; and Kranzler, Ernst, 4,266,789, Cl. 279-60.000.
Krapcho, John; and Turk, Chester F., to E. R. Squibb & Sons, Inc. Substituted amides having antiinflammatory activity and intermediates. 4,267,354, Cl. 560-39.000.
Kraus, Gerard; and Hunt, Harold R., to Phillips Petroleum Company. Carbon black for low-hysteresis rubber compositions. 4,267,160, Cl. 423-456.000.
Krause, Walter O., to Parker-Hannifin Corporation. Filter block and method of making the same. 4,266,408, Cl. 62-474.000.
Krippes, William D., to J. M. Eltzroth & Associates, Inc. Composition and process for inhibiting corrosion of ferrous or non-ferrous metal surfaced articles and providing receptive surface for synthetic resin coating compositions. 4,266,988, Cl. 148-6.210.
Krishnakumar, Suppayan M.: *See*—
Collette, Wayne N.; Krishnakumar, Suppayan M.; and Mahajan, Gautam K., 4,267,144, Cl. 264-523.000.
Krocker, Robert E.: *See*—
Saunders, James F.; and Krocker, Robert E., 4,266,599, Cl. 165-2.000.
Kroger, John E.: *See*—
Barnhart, David A.; Britt, Ronald L.; Kroger, John E.; and Walters, David A., 4,266,528, Cl. 126-299.00D.
Kroplinski, Thaddeus F.; and Case, Barton C., to NL Industries, Inc. Thixotropic polyurethane compositions as sealants for membrane separatory devices. 4,267,044, Cl. 210-321.200.
Krueger, Wallace F.; and Shaw, Anthony R., to Libbey-Owens-Ford Company. Solar energy collector. 4,266,383, Cl. 52-400.000.
Kruger, Burkhard, to Myers-Europe Pumpen GmbH. Advance drive means for a pipe snake. 4,266,709, Cl. 226-181.000.
Krupick, Walter J.: *See*—
Schroeder, George F.; and Krupick, Walter J., 4,266,432, Cl. 74-5.700.
Kubo, Masaharu: *See*—
Ohba, Shinya; Takemoto, Iwao; Nakai, Masaaki; Ando, Haruhisa; and Kubo, Masaharu, 4,267,469, Cl. 307-311.000.
Kubo, Tsutomu: *See*—
Uehara, Tsutomu; Oguchi, Toshihiko; Kubo, Tsutomu; Suzuki, Yukio; Nakagawa, Toshiharu; and Saito, Ichiyoshi, 4,266,503, Cl. 118-657.000.
Kubota, Ltd.: *See*—
Okada, Yoshitsugu, 4,266,753, Cl. 251-305.000.
Kuch, Friedrich: *See*—
Convertini, Ursula; Dimingen, Heinz; Luthje, Holger; Kuch, Friedrich; and Tummoscheit, Peter, 4,267,510, Cl. 324-249.000.
Kuchenbecker, Morris W., to American Can Company. Blister package. 4,266,666, Cl. 206-461.000.
Kuehne, Martin E., to Omnium Chimique Societe Anonyme. Process for the synthesis of vincadifformine and related derivatives. 4,267,330, Cl. 546-51.000.
Kuehnle, Manfred R.; Cox, Richard E.; Harris, George B., Jr.; Forrest, Jess; and Hardy, Carl D., to Coulter Systems Corporation. Apparatus and method for making lithographic printing plates. 4,266,869, Cl. 355-8.000.
Kuenemund, Friedrich: *See*—
Betzl, Hermann; Kuenemund, Friedrich; and Schreiber, Roland, 4,267,535, Cl. 333-165.000.
Kuhlmann, Dieter: *See*—
Lindner, Christian; Arnold, Bernhard; Kuhlmann, Dieter; Kowitz, Friedrich; and Ott, Karl-Heinz, 4,267,278, Cl. 525-2.000.
Kuhlmann, Gerhard: *See*—
Wahl, Gunter; Kuhlmann, Gerhard; and Kranzler, Ernst, 4,266,789, Cl. 279-60.000.
Kuhls, Jurgen: *See*—
Hartwimmer, Robert; and Kuhls, Jurgen, 4,267,098, Cl. 260-45.75W.
Kuhn, Helmut: *See*—
Scheibe, Joachim; and Kuhn, Helmut, 4,267,139, Cl. 264-229.000.
Kuhn, Rolf: *See*—
Berger, Herbert; Gall, Rudi; Kampe, Wolfgang; Bicker, Uwe; and Kuhn, Rolf, 4,267,174, Cl. 424-244.000.
Kulcke, Werner: *See*—
Bohlen, Harald; Greschner, Johann; Kulcke, Werner; and Nehmiz, Peter, 4,267,259, Cl. 430-296.000.
Kulicke and Soffa Industries Inc.: *See*—
Bilane, Glenn B.; Rubin, Lawrence M.; Soffa, Albert; and Vilenski, Dan, 4,266,710, Cl. 228-4.500.
Kulikov, Anatoly P.: *See*—
Birjukov, Mikhail N.; Maslov, Gennady N.; Smorodinnikov, Vladimir P.; Kulikov, Anatoly P.; Udilova, Ida G.; Zuev, Vladimir K.; Lukyanov, Anatoly A.; Tolstopyatov, Konstantin S.; Kalinichev, Alexandr E.; and Zhabin, Ivan Y., 4,266,922, Cl. 425-182.000.
Kulke, Gunther; and Hans, Waldemar, to Robert Bosch GmbH. Injection valve for fuel injection systems. 4,266,729, Cl. 239-533.120.
Kullmann, Dieter, to Siemens Aktiengesellschaft. Cooling arrangement for the rotor of an electric machine. 4,267,474, Cl. 310-52.000.
Kuna, Wayne A.; Katzman, Allison W.; and Terzian, Rouben T., to Marvin Glass & Associates. Sitting doll. 4,266,367, Cl. 46-149.000.
Kung, Roger I.; and Moench, Jerry D., to Motorola, Inc. Signal generator having minimum delay. 4,267,466, Cl. 307-279.000.
Kunitz, Friedrich-Wilhelm; Wolff, Erich; and Frank, Karl, to AGFA-Gevaert, A.G. Use of β-aminoethyl carbamic acid for producing photographic baths and developer compositions. 4,267,263, Cl. 430-469.000.
Kurihara, Norman H.: *See*—
Holmsen, Theodore W.; Kurihara, Norman H.; and Thomas, Paul A., 4,266,964, Cl. 71-94.000.
Kurosawa, Ryoichi, to Tokyo Shibaura Kenki Kabushiki Kaisha. Method and system for controlling induction motors. 4,267,499, Cl. 318-800.000.
Kurtz, Stuart J.; Blakeslee, Theodore R., III; and Scarola, Leonard S., to Union Carbide Corporation. Method for reducing melt fracture during extrusion of ethylene polymers. 4,267,146, Cl. 264-564.000.
Kusu, Takayuki: *See*—
Kodera, Yoshiaki; Watanabe, Kiyoyuki; and Kusu, Takayuki, 4,266,370, Cl. 47-29.000.
Kutsch, Howard J., to Du Pont de Nemours, E. I., and Company. Energy-absorbing torque transmitter. 4,266,409, Cl. 64-12.000.
Kuxdorf, Bernhard; Wissel, Kurt; and Kaiser, Karl, to Hoechst Aktiengesellschaft. Degassing column. 4,266,949, Cl. 55-186.000.
Kuykendall, John R. Vacuum breaker-pressure release device. 4,266,568, Cl. 137-493.800.
Kuzela, Joseph, Jr.: *See*—
Bruner, Frank D.; and Kuzela, Joseph, Jr., 4,266,485, Cl. 105-61.000.
Kyle, Robert R.: *See*—
Volpi, John P.; and Kyle, Robert R., 4,267,597, Cl. 455-76.000.
Kyri, Hans; and Dobbers, Jurgen, to Bayer Aktiengesellschaft. Precipitating agent for dephosphatizing effluent. 4,267,058, Cl. 210-716.000.
La Telemecanique Electrique: *See*—
Periot, Jean-Marie, 4,267,522, Cl. 331-65.000.
LaBorde, Russel G.; and Brieger, Emmett F. Wireline safety check valve. 4,266,605, Cl. 166-97.000.
Labuhn, Peter: *See*—
Grieder, Alfred; Coers, Klaus-Jurgen; and Labuhn, Peter, 4,267,356, Cl. 560-43.000.
Ladd, Harley G. F. Pleat forming means and method. 4,266,699, Cl. 223-34.000.
Ladney, Michael, Jr.: *See*—
Foster, Edwin E.; and Foster, Thomas E., 4,266,831, Cl. 301-37.0PB.
Laffoon, James D.: *See*—
Orals, David L.; and Laffoon, James D., 4,266,384, Cl. 52-410.000.
Lagnado, Isaac: *See*—
Bond, James W.; Alsup, James M.; Speiser, Jeffrey M.; Whitehouse, Harper J.; and Lagnado, Isaac. 4,267,580, Cl. 364-824.000.
Laguilharre, Pierre R.: *See*—
Ciboit, Jacques J.; and Laguilharre, Pierre R., 4,267,015, Cl. 159-47.00R.
Lakhno, Pavel E.: *See*—
Velikoselsky, Nikolai D.; Smirnov, Anatoly I.; Perets, Nikolai Y.; Vinogradov, Sergei S.; Podbeltsev, Viktor I.; and Lakhno, Pavel E., 4,266,680, Cl. 212-193.000.

Lamadrid, Rene: *See—*
Jennings, C. Michael; Kitchenham, Albert; and Lamadrid, Rene, 4,266,717, Cl. 233-26.000.

Lamon, David E.; and Klemmer, Paul J., to Appleton Machine Company. Positioning mechanism for calender rolls. 4,266,475, Cl. 100-168.000.

Lancini, Giancarlo: *See—*
White, Richard J.; and Lancini, Giancarlo, 4,267,274, Cl. 435-253.000.

Landau, Sergio, to Halen-Elliot do Brazil Industria e Comercio Equipamentos de Precisao Ltda. Pressure hypodermic injector for intermittent vaccination. 4,266,541, Cl. 128-207.230.

Landoll, Leo M., to Hercules Incorporated. Process for producing spherical particles of crystalline polymers. 4,267,310, Cl. 260-40.00R.

Lang, Manfred: *See—*
Spinner, Georg; and Lang, Manfred, 4,267,531, Cl. 333-22.00R.

Langbein-Pfanhauser Werke AG: *See—*
Brugger, Robert, 4,267,218, Cl. 428-35.000.

Lange, Gottfried, to Siemens Aktiengesellschaft. Method of eliminating background residual charge in electrophotographic image reproduction and apparatus for carrying out said method. 4,267,450, Cl. 250-315.200.

Langenfeld, Joseph W.; and Westendorf, Neal W., to Westendorf Manufacturing Co. Materials handling device and the method of mounting the same on a tractor. 4,266,906, Cl. 414-686.000.

Langenfeld, Joseph W.; and Westendorf, Neal W., to Westendorf Manufacturing Co. Means for hydraulic self-leveling of a loader bucket. 4,266,909, Cl. 414-700.000.

Lankheet, Jay A. Reinforced resin molding method and apparatus. 4,267,142, Cl. 264-510.000.

Lansing Bagnall Limited: *See—*
Manners, Frank, 4,267,492, Cl. 318-376.000.

Lapierre, Philippe. Prefabricated airplane model kit. 4,266,366, Cl. 46-76.00R.

Lapp, Otto: *See—*
Lohmann, Joachim W.; Lapp, Otto; and Ranz, Erwin, 4,267,264, Cl. 430-505.000.

Larson, Clayton E.; and Lemp, Edward H., to White Metal Rolling & Stamping Corp. Extension ladders with rotary hook locks. 4,266,631, Cl. 182-211.000.

Laszlo, Akos; and Merriman, Horace B., to Courtaulds Limited. Method of, and means for, reducing the liquid content of air-permeable material in tubular form. 4,266,983, Cl. 134-21.000.

Lauber, Ernst, to Habegger, Willy. Traveling assembly and wheel suspension for a rolling and stepping vehicle. 4,266,627, Cl. 180-8.00B.

Laubie, Michel: *See—*
Malen, Charles E.; Roger, Pierre; and Laubie, Michel, 4,267,345, Cl. 548-233.000.
Regnier, Gilbert; Laubie, Michel; and Poignant, Jean-Claude, 4,267,178, Cl. 424-250.000.

Laurin, Dean G.: *See—*
Becker, Lawrence F.; Czuba, Leonard F.; and Laurin, Dean G., 4,266,542, Cl. 128-214.00R.

Lauter, Gernot: *See—*
Troger, Johannes; Lauter, Gernot; and Sporl, Heinrich, 4,266,893, Cl. 409-206.000.

Laux, Joseph J., to Ormid Company. Footwear insole. 4,266,350, Cl. 36-44.000.

Laviron, Michel: *See—*
Derewonko, Henri; Laviron, Michel; and Lepage, Joel, 4,267,520, Cl. 330-286.000.

Lawitzki, Friedrich: *See—*
Henne, Werner; Dunweg, Gustav; Schmitz, Werner; Pohle, Raimund; and Lawitzki, Friedrich, 4,267,047, Cl. 210-490.000.

Lazarevich, Vladeta D.: *See—*
Carroll, Arthur B.; Lazarevich, Vladeta D.; and Gardner, Mark R., 4,267,443, Cl. 250-221.000.

Leamy, Harry J.: *See—*
Benton, Janet L.; Doherty, Charles J.; Kimerling, Lionel C.; and Leamy, Harry J., 4,266,986, Cl. 148-1.500.

Leanna, Dale D.; and Jorgensen, Allen R., to Magna-Graphics Corporation. Mandrel supports for automatic web rewinder. 4,266,735, Cl. 242-56.00A.

Ledding, Willard E., to CPC International Inc. Fluidized bed process. 4,266,348, Cl. 34-10.000.

Le Donne, Robert. Mounts for attachment of devices to wheelchairs. 4,266,825, Cl. 297-194.000.

Lee, Ching W.: *See—*
Dempsey, Martin E.; and Lee, Ching W., 4,267,533, Cl. 333-151.000.

Lee, Harry W., Jr., to Reynolds Metals Company. Can body and method for making same. 4,266,685, Cl. 220-74.000.

Lee, Pang-Kai, to Westinghouse Electric Corp. Metal-solid lubricant brushes for high-current rotating electrical machinery. 4,267,476, Cl. 310-251.000.

Lee, Seung B. Bath seat for babies. 4,266,306, Cl. 4-572.000.

Lehrer, William I.: *See—*
Pierce, John M.; Lehrer, William I.; and Radigan, Kenneth J., 4,267,012, Cl. 156-643.000.

Leiker, Donald G. Excavating apparatus. 4,266,908, Cl. 414-690.000.

Lemp, Edward H.: *See—*
Larson, Clayton E.; and Lemp, Edward H., 4,266,631, Cl. 182-211.000.

Lenke, Hans-Dieter: *See—*
Frickel, Fritz-Frieder; Franke, Albrecht; Koenig, Horst; Lenke, Hans-Dieter; and Gries, Josef, 4,267,187, Cl. 424-274.000.

Leonard, Murray; and Jugl, Herbert F., to Vernitron Corporation. Gas collector/spark igniter for gas burners. 4,266,930, Cl. 431-263.000.

Lepage, Joel: *See—*
Derewonko, Henri; Laviron, Michel; and Lepage, Joel, 4,267,520, Cl. 330-286.000.

Lerot, Luc: *See—*
Hardy, Nicolas; Lerot, Luc; and Walraevens, Rene, 4,267,124, Cl. 260-502.00R.

Les Cables De Lyon: *See—*
Agaisse, Michel, 4,266,992, Cl. 156-49.000.

Les Laboratories Meram: *See—*
Durlach, Jean P., 4,267,194, Cl. 424-315.000.

Les Produits Associes BPA SA: *See—*
Moret, Michel A., 4,266,535, Cl. 128-23.000.

Leslie, W. Dean: *See—*
Cabbiness, Dale K.; Carel, Alfred B.; and Leslie, W. Dean, 4,267,445, Cl. 250-255.000.

Leston, Gerd, to Koppers Company, Inc. Process for separating paracresol from a mixture of methylated and ethylated phenols. 4,267,389, Cl. 568-750.000.

Leston, Gerd, to Koppers Company, Inc. Process for obtaining paracresol and meta-cresol from a mixture of methylated and ethylated phenols characterized by selective complexation with calcium bromide and sodium acetate. 4,267,390, Cl. 568-751.000.

Leston, Gerd, to Koppers Company, Inc. Process for obtaining paracresol and meta-cresol from a mixture of methylated and ethylated phenols characterized by urea clathration of metal-cresol. 4,267,391, Cl. 568-751.000.

Leston, Gerd, to Koppers Company, Inc. Process for obtaining paracresol and meta-cresol from a mixture of methylated and ethylated phenols containing meta-para-cresol. 4,267,392, Cl. 568-751.000.

Leutner, Bernd: *See—*
Diessel, Paul; Perner, Johannes; Leutner, Bernd; and Schlimper, Hans-Ulrich, 4,267,068, Cl. 252-179.000.

Levy, Richard C.: *See—*
Dankman, Scott; Levy, Richard C.; and McCoy, Bryan L., 4,267,551, Cl. 340-384.00E.

Lewis, David L., to Bendix Corporation, The. High torque chuck assembly and collet. 4,266,895, Cl. 409-232.000.

Lewis, Eugene W.: *See—*
Warden, Fuller; and Lewis, Eugene W., 4,266,933, Cl. 433-82.000.

Lewis, Joseph J.; and Webb, Robert L., to SK&F Lab Co. Imidazolemethylphosphonium salts. 4,267,337, Cl. 548-119.000.

Lewis, Richard B.: *See—*
Ziolo, Ronald F.; and Lewis, Richard B., 4,267,247, Cl. 430-120.000.

Lewis, Roger N.: *See—*
Pastorino, Ronald L.; and Lewis, Roger N., 4,267,109, Cl. 260-338.000.

Ley, Gregor: *See—*
Geelhaar, Hans J.; Penzel, Erich; and Ley, Gregor, 4,267,091, Cl. 260-29.6TA.

Libbey-Owens-Ford Company: *See—*
Krueger, Wallace F.; and Shaw, Anthony R., 4,266,383, Cl. 52-400.000.
Meeker, James A., 4,267,140, Cl. 264-291.000.

Licinvest AG: *See—*
Ackeret, Peter, 4,266,834, Cl. 312-8.000.

Lidy, Werner; Rossmy, Gerd; and Kollmeier, Hans-Joachim, to Th. Goldschmidt AG. Process for easily degrading waste consisting of the reaction products of organic compounds containing isocyanate groups with alcohols and/or water. 4,267,078, Cl. 260-2.300.

Liebing, Alan P., to Ferranti Limited. Gyroscopic apparatus. 4,266,431, Cl. 74-5.100.

Liebman, Arno J. Cardiac patient support. 4,266,759, Cl. 269-323.000.

Limpach, Raymond: *See—*
Daldrup, Heinz G.; Nothhelfer, Gunther; Franke, Friedrich H.; and Limpach, Raymond, 4,266,968, Cl. 75-42.000.

Linde, Bjorn H.; and Reil, Wilhelm, to Tetra Pak International AB. Method and an arrangement for the advancing of a packing material web through a packing machine. 4,266,389, Cl. 53-396.000.

Lindner, Christian; Arnold, Bernhard; Kuhlmann, Dieter; Kowitz, Friedrich; and Ott, Karl-Heinz, to Bayer Aktiengesellschaft. ABS moulding compounds having improved surface. 4,267,278, Cl. 525-2.000.

Lindner, Christian: *See—*
Konig, Klaus; Schreckenberg, Manfred; Lindner, Christian; Suling, Carlhans; and Freitag, Dieter, 4,267,303, Cl. 528-171.000.

Lindner, Heinz; Stopp, Fritz; Georgie, Wolfgang; Oehm, Werner; Muller, Lisbet; and Graubner, Brigitte, to Veb Wirkmaschinenbau Karl-Marx-Stadt. Method and machine for forming plush-loop warp knit fabric. 4,266,411, Cl. 66-84.00R.

Linsay, Michael. Torque limiting and shock absorbing coupling. 4,266,644, Cl. 192-56.00R.

Lippera, Noel, to Pont-A-Mousson S.A. Method of coupling plastic pipes by welding. 4,266,997, Cl. 156-158.000.

Lippmann, Wilbur, to American Home Products Corporation. Method of use and composition for 1,3-dihydro-3-(2-hydroxy-2-methylpropyl)-2H-isoindol-1-one. 4,267,189, Cl. 424-274.000.

Lisle, Thomas K., Jr.: *See—*
Driscoll, Michael M.; and Lisle, Thomas K., Jr., 4,267,513, Cl. 328-60.000.

Litz, Reuben. Slide mount for motorcycle luggage box. 4,266,703, Cl. 224-32.00A.

Litzinger, Elmer F., to Brown & Williamson Tobacco Corporation. Tobacco smoke filtering compositions. 4,266,561, Cl. 131-341.000.

Ljung, Bo H. G.; and Williams, Charles J., to Singer Company, The. Pathlength controller for a ring laser gyroscope. 4,267,478, Cl. 310-315.000.

Lo, Shih H., to Farsan Enterprises Limited. Stabilizers for oil-water mixtures. 4,266,943, Cl. 44-51.000.

Locatell, Louis, Jr.; Zepp, Charles M.; and Cieciuch, Ronald F., to Polaroid Corporation. Novel image dye-providing materials, photographic products and processes. 4,267,251, Cl. 430-224.000.

Lockheed Corporation: *See*—
Kavaloski, Peter P.; and Hale, Thomas K., 4,266,305, Cl. 4-480.000.

Loepfe, Erich; Weidmann, Erich; and Graf, Walter, to Gebrueder Loepfe AG. Electronic device for monitoring a plurality of running threads on a textile machine. 4,267,554, Cl. 340-677.000.

Lohmann, Joachim W.; Lapp, Otto; and Ranz, Erwin, to AGFA-Gevaert, A.G. Color photographic recording material. 4,267,264, Cl. 430-505.000.

Lomnicki, Joseph J., to Mainland Industries, Inc. Edger saw combining chipper with circular saw blade. 4,266,584, Cl. 144-39.000.

Londner epouse Ours, Rosette. Method of manufacture of sports shoes, and shoes manufactured by said method. 4,266,314, Cl. 12-142.00P.

Long, Wendell P., to Hercules Incorporated. 1-Olefin polymerization catalyst. 4,267,294, Cl. 526-125.000.

Longyear Company: *See*—
Anderson, Ronald B.; Svendsen, Walter W.; Beckley, Gary H.; and Caneer, Clifford, Jr., 4,266,444, Cl. 74-661.000.

Lorenzo, John L., to Pitney Bowes Inc. Apparatus for controlling inking means. 4,266,480, Cl. 101-351.000.

Lottes, Paul: *See*—
Schweikl, Ludwig; Greune, Christian; and Lottes, Paul, 4,266,725, Cl. 239-265.190.

Louthan, Rector P.; and Doss, Richard C., to Phillips Petroleum Company. Sealant compositions. 4,267,307, Cl. 528-293.000.

Louzos, Demetrios V., to Union Carbide Corporation. Layered charge transfer complex cathodes or solid electrolyte cells. 4,267,244, Cl. 429-213.000.

Lovisolo, Pier P.: *See*—
Cozzi, Paolo; Magni, Osvaldo; Bertone, Leone; Angelucci, Romano; and Lovisolo, Pier P., 4,267,327, Cl. 544-336.000.

Lowenschuss, Oscar, to Raytheon Company. Digital memory system. 4,267,596, Cl. 455-18.000.

Lubavs, Arnold A. Mobile block production plant. 4,266,916, Cl. 425-62.000.

Lubrizol Corporation, The: *See*—
Karn, Jack L., 4,266,945, Cl. 44-68.000.

Lucas Industries Limited: *See*—
Williams, Malcolm; Tingey, Albert R.; Southgate, John P.; and Russell, Steven J., 4,266,522, Cl. 123-492.000.

Ludwig, Lawrence P., to United States of America, Administrator, National Aeronautics and Space Administration. Circumferential shaft seal. 4,266,788, Cl. 277-193.000.

Ludwigson, Robert G., to C-R-O, Inc. Cutting tool guiding system for metal cutting machines. 4,266,989, Cl. 148-9.00R.

Luk, Kong; Clayton, John P.; and Rogers, Norman H., to Beecham Group Limited. Antibacterial compounds. 4,267,316, Cl. 542-427.000.

Lukesch, Norbert, to Voest-Alpine Aktiengesellschaft. Directional valve. 4,266,575, Cl. 137-872.000.

Lukyanov, Anatoly A.: *See*—
Birjukov, Mikhail N.; Maslov, Gennady N.; Smorodinnikov, Vladimir P.; Kulikov, Anatoly P.; Udilova, Ida G.; Zuev, Vladimir K.; Lukyanov, Anatoly A.; Tolstopyatov, Konstantin S.; Kalinichev, Alexandr E.; and Zhabin, Ivan Y., 4,266,922, Cl. 425-182.000.

Lundstrom, Axel L., to Atlas Copco Aktiebolag. Drill boom arrangement. 4,266,749, Cl. 248-652.000.

Lunkenheimer, Winfried: *See*—
Stetter, Jorg; Draber, Wilfried; Thomas, Rudolf; and Lunkenheimer, Winfried, 4,267,338, Cl. 548-143.000.

Luthje, Holger: *See*—
Convertini, Ursula; Dimingen, Heinz; Luthje, Holger; Kuch, Friedrich; and Tummoscheit, Peter, 4,267,510, Cl. 324-249.000.

Lux, Robert J., Jr., to Thermodynamics Corporation. Transformer pad with cable protective sleeve. 4,267,399, Cl. 174-1.000.

Maag Gear-Wheel & Machine Co. Ltd.: *See*—
Staedeli, Otto, 4,266,647, Cl. 192-67.00A.

Maas, Edward T., Jr.; and Steger, John J., to Exxon Research and Engineering Company. Process of preparing metal phosphorus trisulfides. 4,267,157, Cl. 423-303.000.

Massbol, Alfred G.; and Dulog, Lothar G., to s.a. Texaco Belgium n.v. Preparation of thioethers. 4,267,375, Cl. 568-57.000.

Maatschappij van Berkel's Patent N.V.: *See*—
Oostvogels, Johannes M., 4,266,456, Cl. 83-731.000.

Maccise, Yamil A. Jug with sugar bowl, coffee pot and cups. 4,266,684, Cl. 220-23.830.

Machida, Masataka: *See*—
Ninomiya, Youichi; Ogawa, Hirotoshi; Ueda, Tomoyuki; and Machida, Masataka, 4,266,754, Cl. 251-306.000.

Madigan, Thomas M.: *See*—
Dodge, Dennis; Matwey, Paul; Madigan, Thomas M.; and Powers, Robert H., 4,266,866, Cl. 354-84.000.

Maehara, Takashi: *See*—
Mizutani, Yukio; Mitani, Katsuo; and Maehara, Takashi, 4,267,084, Cl. 260-23.0XA.

Mafune, Masao: *See*—
Nomura, Hiroki; Mafune, Masao; and Koyanagi, Masaru, 4,267,427, Cl. 219-121.0LL.

Magna-Graphics Corporation: *See*—
Leanna, Dale D.; and Jorgensen, Allen R., 4,266,735, Cl. 242-56.00A.

Magni, Osvaldo: *See*—
Cozzi, Paolo; Magni, Osvaldo; Bertone, Leone; Angelucci, Romano; and Lovisolo, Pier P., 4,267,327, Cl. 544-336.000.

Mahajan, Gautam K.: *See*—
Collette, Wayne N.; Krishnakumar, Suppayan M.; and Mahajan, Gautam K., 4,267,144, Cl. 264-523.000.

Mahan, John E.: *See*—
Vives, Van C.; and Mahan, John E., 4,267,351, Cl. 549-19.000.

Mahoney, Frank A., to Sperry Corporation. Multi-function mechanical printer drive means. 4,266,479, Cl. 101-93.090.

Mahrus, Duraid; and Paulos, Antonio C., to Metal Leve S.A. Industria e Comercio. Method of preparing steel-backed antifriction alloy, composite strips and products therefrom. 4,267,241, Cl. 428-645.000.

Maier, Alfred E.; and Bratkowski, Walter V., to Westinghouse Electric Corp. Circuit breaker structure with shock absorbers. 4,267,419, Cl. 200-288.000.

Maier, Franz, to Sud-Chemie Aktiengesellschaft. Process and apparatus for the exploitation of the sulfur compounds contained in gases containing oxygen and a high water vapor content. 4,267,162, Cl. 423-542.000.

Mailliet, Pierre, to Paul Wurth, S.A. Device for handling the various components of an installation for the injection of pre-heated air into a shaft furnace. 4,266,907, Cl. 414-687.000.

Mainland Industries, Inc.: *See*—
Lomnicki, Joseph J., 4,266,584, Cl. 144-39.000.

Makino, Yoshihiro; and Yoshihara, Toshihiko, to Mitsubishi Denki Kabushiki Kaisha. Bubbling type dissolved gas separator. 4,266,950, Cl. 55-196.000.

Makipirtti, Simo A. I.: *See*—
Setala, Pekka T.; Makipirtti, Simo A. I.; and Heino, Heimo J., 4,266,512, Cl. 122-5.50R.

Makley, James A.: *See*—
Karn, Donald L.; and Makley, James A., 4,267,006, Cl. 156-384.000.

Malen, Charles E.; Roger, Pierre; and Laubie, Michel, to Science Union et Cie. Aryltrifluoroethylamines. 4,267,345, Cl. 548-233.000.

Malinowski, Frank P.: *See*—
Kramer, William E.; and Malinowski, Frank P., 4,266,762, Cl. 271-225.000.

Mallett, Lawrence G., to USM Corporation. Automatic stud welding gun with perforated stud collet. 4,267,426, Cl. 219-98.000.

Maloof, Ferris A. Cap printing apparatus. 4,266,476, Cl. 101-35.000.

Maloy, Rex M.: *See*—
Coburn, C. David; and Maloy, Rex M., 4,266,564, Cl. 133-5.00R.

Manley, Rockliffe S., to Pulp and Paper Research Institute of Canada. Apparatus for electrostatic fibre spinning from polymeric fluids. 4,266,918, Cl. 425-66.000.

Mann, Seymour, to Aceto Chemical Co, Inc. Production of sodium and potassium alkoxides. 4,267,396, Cl. 568-851.000.

Manners, Frank, to Lansing Bagnall Limited. Control circuit for a D.C. motor. 4,267,492, Cl. 318-376.000.

Mannesmann Aktiengesellschaft: *See*—
Meier, Friedrich; and Philipp, Hugo, 4,266,896, Cl. 409-299.000.

Mannesmann Demag AG: *See*—
Boddenberg, Klaus; Waldmann, Jurgen; and Demmer, Manfred, 4,267,216, Cl. 427-397.800.
Schmitz, Gunter, 4,266,758, Cl. 266-244.000.

Mannhardt, Werner: *See*—
Brown, Wade R.; and Mannhardt, Werner, 4,266,726, Cl. 239-406.000.

Manoury, Philippe: *See*—
Najer, Henry; and Manoury, Philippe, 4,267,328, Cl. 544-394.000.

Manov-Juvensky, Vladimir I.: *See*—
Nefedov, Boris K.; Manov-Juvensky, Vladimir I.; Dergunov, Jury I.; Rysikhin, Anatoly I.; and Chimishkian, Alexandr L., 4,267,070, Cl. 252-429.00R.

Mansfield, Amos R., Jr.: *See*—
Cannon, Lee E.; and Mansfield, Amos R., Jr., 4,267,497, Cl. 318-661.000.

Manufacture de Machines du Haut-Rhin S.A.: *See*—
Richard, J. Richard, 4,266,656, Cl. 198-655.000.

Manwiller, Carl H.: *See*—
Dunnington, Gordon B.; and Manwiller, Carl H., 4,266,919, Cl. 425-102.000.

Margel, Shlomo: *See*—
Rembaum, Alan; and Margel, Shlomo, 4,267,235, Cl. 428-407.000.

Mark, Victor, to General Electric Company. Process for preparing polycarbonates using nitrogen crown-cyclic compounds as catalysts. 4,267,305, Cl. 528-199.000.

Markarian, Mark; and Puppolo, Henry F., to Sprague Electric Company. Thin electrolytic capacitor manufacture. 4,266,332, Cl. 29-570.000.

Markarian, Mark: *See*—
Puppolo, Henry F.; and Markarian, Mark, 4,267,565, Cl. 361-433.000.

Markham, Michael H., to Chubb Industries Ltd. Relocking device for safes and the like. 4,266,488, Cl. 109-59.00R.

Maroszek, Raymond V., to American Can Company. Unitary double cavity carton. 4,266,713, Cl. 229-33.000.

Marsh, Edward K.; and Nelson, Dean R., to Bendix Corporation, The. Insulation displacing electrical contact and method of making same. 4,266,843, Cl. 339-97.00R.

Martin, Andrew C., to Black Clawson Company, The. Pressurized rotary screening apparatus. 4,267,035, Cl. 209-273.000.

Martin, Frank S.; Melvin, Terence; and Pieroni, Joseph K., to Uniroyal, Inc. Solid golf ball. 4,266,772, Cl. 273-218.000.

Martin, Harry, to Bayerische Motoren Werke Aktiengesellschaft. Hydraulically actuated friction clutch, especially lamellae clutch automatic transmissions of motor vehicles. 4,266,648, Cl. 192-85.0AA.

Marulic, Walter J.; and Gutrigde, Jack E., to Pullman Incorporated. Railway passenger car window framing construction. 4,266,487, Cl. 105-397.000.

Marvin Glass & Associates: *See—*
Kuna, Wayne A.; Katzman, Allison W.; and Terzian, Rouben T., 4,266,367, Cl. 46-149.000.

Marx, Arthur F.; Smid, Peter M.; and Vellekoop, Pieter, to Gist Brocades N.V. New process for the preparation 17β-hydroxy-3-oxo-17α-pregnene and pregnadiene-21-carboxylic acid γ-lactones. 4,267,106, Cl. 260-239.570.

Marykuca, William: *See—*
Holmes, Gordon W.; and Marykuca, William, 4,266,690, Cl. 221-254.000.

Masaki, Kouichi: *See—*
Sasazawa, Koji; Kitamoto, Tatsuji; Akashi, Goro; Masaki, Kouichi; and Dezawa, Shinichiro, 4,267,207, Cl. 427-129.000.

Maschinenfabrik Alfred Schmermund GmbH & Co.: *See—*
Bald, Hubert, 4,266,652, Cl. 198-347.000.
Bald, Hubert, 4,267,444, Cl. 250-227.000.

Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Helm, Siegfried; and Sprang, Peter, 4,266,911, Cl. 416-9.000.

Mashimo, Yukio: *See—*
Shinoda, Nobuhiko; Ito, Tadashi; Ito, Fumio; Mashimo, Yukio; and Sakurada, Nobuaki, 4,267,437, Cl. 235-92.0PE.

Masi, Paolo; Suarato, Antonino; Bernardi, Luigi; and Arcamone, Federico, to Farmitalia Carlo Erba S.p.A. Novel daunomycin derivatives, their aglycones and the use thereof. 4,267,116, Cl. 260-376.000.

Maslov, Gennady N.: *See—*
Birjukov, Mikhail N.; Maslov, Gennady N.; Smorodinnikov, Vladimir P.; Kulikov, Anatoly P.; Udilova, Ida G.; Zuev, Vladimir K.; Lukyanov, Anatoly A.; Tolstopyatov, Konstantin S.; Kalinichev, Alexandr E.; and Zhabin, Ivan Y., 4,266,922, Cl. 425-182.000.

Mason, David R. Apparatus for facilitating attachment of a bag to a lawnmower. 4,266,319, Cl. 16-111.00A.

Mason, Gary E.: *See—*
Fisher, George A.; and Mason, Gary E., 4,266,628, Cl. 180-54.00F.

Mason, James L.; and Varjabedian, Steve, to Ford Motor Company. Rear step bumper. 4,266,817, Cl. 293-117.000.

Massarsky, Philip M., to Pennwalt Corporation. Anode for high resistivity cathodic protection systems. 4,267,029, Cl. 204-196.000.

Massey-Ferguson Inc.: *See—*
Fritsch, Joseph E., 4,266,446, Cl. 74-796.000.
Mueller, Otto, Jr., 4,266,616, Cl. 172-7.000.

Massey-Ferguson Services N.V.: *See—*
Haines, Rolf; and Reid, Robert M., 4,266,490, Cl. 111-3.000.

Masstron Scale, Inc.: *See—*
Nordstrom, Kjell H.; Dillon, Benny N.; and Susor, William C., 4,266.624, Cl. 177-253.000.

Mast, Aquila D., to Sperry Corporation. Method for collecting and recycling crop material particles in a roll forming machine. 4,266,390, Cl. 56-1.000.

Mastriani, Elvin A., to Arrow Converting Equipment, Inc. Air differential mandrel and method of differentially winding and rewinding tapes. 4,266,737, Cl. 242-72.00B.

Masuda, Takao: *See—*
Ikenoue, Shinpei; and Masuda, Takao, 4,267,267, Cl. 430-533.000.

Masudaya Toy Company Limited: *See—*
Saitoh, Shigeru, 4,266,769, Cl. 273-86.00B.

Mathis, Leroy: *See—*
Rowan, Robert A.; and Mathis, Leroy, 4,266,510, Cl. 119-51.00R.

Matsuda, Akira; Goshima, Norio; Yasuda, Shigeo; Iwasaki, Motoaki; and Nishino, Hiroshi, to Bridgestone Tire Company Limited; and Mitaka Instrument Company Limited. Alarm device for informing reduction of pneumatic pressure of vehicle tires. 4,267,546, Cl. 340-58.000.

Matsui, Takahiro; and Saito, Yoshio, to Kabushiki Kaisha Morita Seisakusho. Device for controlling tilting of headrest of treatment table. 4,266,760, Cl. 269-323.000.

Matsumoto, Shoichi; Kato, Hirohisa; and Wada, Yusuke, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of producing electrochromic display device. 4,266,335, Cl. 29-592.00R.

Matsumura, Yasushi: *See—*
Koshida, Daikichi; Sugisawa, Ko; Matsumura, Yasushi; and Taga, Kazumitsu, 4,267,199, Cl. 426-589.000.

Matsuoka, Hideoki; Oka, Takashi; Mizote, Masanori; Yamaki, Kiyoshi; Nomura, Hiroyuki; Mogi, Takaaki; and Mimura, Akitoshi, to Nissan Motor Company, Limited. Apparatus for adjusting the position and/or angle of each movable equipment of a motor vehicle. 4,267,494, Cl. 318-568.000.

Matsuoka, Kimiaki: *See—*
Ozawa, Masahiro; Komatsu, Tadaaki; and Matsuoka, Kimiaki, 4,267,360, Cl. 560-111.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Ishikawa, Toshiro; Kitani, Teruo; and Baba, Takaaki, 4,267,560, Cl. 358-22.000.
Nawa, Motoyuki; Takahashi, Yutaka; and Sugawara, Norio, 4,266,722, Cl. 239-590.500.
Sasaki, Umekichi; Tsunemi, Masaaki; Yamada, Kaichi; and Morikawa, Yoshiyuki, 4,267,064, Cl. 252-52.00A.

Matsushita Electric Industrial Co., Ltd: *See—*
Fujita, Niitaka, 4,266,563, Cl. 133-4.00A.

Matsuzawa, Mitsuo; and Yashita, Hajime, to Trio Kabushiki Kaisha. Interference eliminator in communication receiver. 4,267,605, Cl. 455-266.000.

Matthys, Bernard A.; Schoen, Donald W.; and Anderson, Carl E., to United States of America, Army. Mechanism for removing dust particles from an engine air cleaner. 4,266,953, Cl. 55-294.000.

Mattson, George B.: *See—*
Sumegi, Robert B.; Woodhouse, Geoffrey D.; Mattson, George B.; Jansen, Harvey B.; Bolliger, Frederic E.; and Hatch, Robert A., 4,266,401, Cl. 60-39.16R.

Mattsson, Kjell: *See—*
Nygaard, Kurt; Mattsson, Kjell; and Bratt, Sven-Erik, 4,267,567, Cl. 362-46.000.

Matwey, Paul: *See—*
Dodge, Dennis; Matwey, Paul; Madigan, Thomas M.; and Powers, Robert H., 4,266,866, Cl. 354-84.000.

Maxson Corporation, The: *See—*
Puariea, Douglas A., 4,266,486, Cl. 105-276.000.

Mayer, Dieter: *See—*
Motz, Herbert; Schaefer, Dieter; Huebner, Werner; and Mayer, Dieter, 4,267,203, Cl. 427-48.000.

Maykemper, Alfred, to Hermann Hemscheidt Maschinenfabrik GmbH & Co. Hydraulic roof-support frame. 4,266,892, Cl. 405-293.000.

Mayumi, Hiroshi, to Nippon Electric Co., Ltd. Digital integrated circuit. 4,267,463, Cl. 307-445.000.

Mazzella, Frank: *See—*
Yeh, Kuo-Chen; and Mazzella, Frank, 4,267,164, Cl. 424-44.000.

Mazzorana, Alfred B., to Societe de Paris et du Rhone. Free wheels. 4,266,642, Cl. 192-45.000.

Mazzotta, Paul F.: *See—*
Rick, Randy L.; Mazzotta, Paul F.; and Daiello, Cosimo D., 4,267,431, Cl. 219-225.000.

McBride, Roy T. Humane trap device. 4,266,364, Cl. 43-90.000.

McBurnett, James R.; and Eley, James M., to Tyrone Hydraulics Inc. Gear pumps and motors. 4,266,915, Cl. 418-126.000.

MCC Flowseal, a unit of Mark Controls Corporation: *See—*
Johnson, Stephen A., 4,266,752, Cl. 251-173.000.

McClure, Thomas D., to Johns-Manville Corporation. Sample preparation apparatus and process for the use thereof. 4,267,056, Cl. 210-678.000.

McCollum, John D., to Standard Oil Company (Indiana). Method for detecting underground conditions. 4,266,608, Cl. 166-250.000.

McCormick, Charles L. Controlled release pesticides and method of preparation. 4,267,280, Cl. 525-56.000.

McCormick, Charles L. Controlled release pesticides. 4,267,281, Cl. 525-61.000.

McCoy, Bryan L.: *See—*
Dankman, Scott; Levy, Richard C.; and McCoy, Bryan L., 4,267,551, Cl. 340-384.00E.

McCoy, Terence D.: *See—*
Farr, Garth M.; and McCoy, Terence D., 4,266,450, Cl. 81-57.330.

McDermott, William E.; Benard, David J.; Pchelkin, Nicholas R.; and Bousek, Ronald R., to United States of America, Air Force. Continuous wave chemically pumped atomic iodine laser. 4,267,526, Cl. 331-94.50G.

McDonough, Robert M., to Ford Aerospace & Communications Corp. Low profile pushbutton radio tuner. 4,266,433, Cl. 74-10.330.

McDougal, John A. Vibration sensors for internal combustion engines. 4,266,421, Cl. 73-1.0DV.

McDuffie, James W.; Knepper, Larimer J.; and Knipper, Larimer J., to Sperry Corporation. Header attachment mechanism for combines. 4,266,391, Cl. 56-14.500.

McDuffie, James W.: *See—*
Knepper, Larimer J.; McDuffie, James W.; and Wagstaff, Robert A., 4,266,392, Cl. 56-14.500.

McFall, Richard T. Fluid resonator. 4,266,879, Cl. 366-108.000.

McGill, Charles K., to Reilly Tar & Chemical Corporation. Substituted 2,2'-bipyridyl compounds and process for preparing same. 4,267,335, Cl. 546-257.000.

McIntosh Laboratory, Inc.: *See—*
Russell, Roger H., 4,267,405, Cl. 179-1.00E.

McKeighen, Ronald E.; and Buchin, Michael P., to Siemens Gammasonics, Inc. Permutating analog shift register variable delay system. 4,267,584, Cl. 367-11.000.

McKewan, Arthur J., to Microdot Inc. Prevailing torque nut. 4,266,590, Cl. 411-307.000.

McNulty, Robert A. Apparatus for simultaneously exercising a plurality of horses. 4,266,508, Cl. 119-29.000.

McQuary, Kenneth L., to Placo Products Company. Target with hit counter. 4,266,780, Cl. 273-387.000.

McWhorter, Edward M. Articulating guide spring. 4,266,443, Cl. 74-579.00E.

Medtronic, Inc.: *See—*
Dutcher, Robert G.; and O'Neill, Edward G., 4,266,552, Cl. 128-419.00P.
Stein, Marc T., 4,266,551, Cl. 128-419.0PG.

Meeker, James A., to Libbey-Owens-Ford Company. Method and apparatus for shaping thermoplastic sheets. 4,267,140, Cl. 264-291.000.

Mehta, Bakulesh A.: *See—*
Regan, John F.; and Mehta, Bakulesh A., 4,267,593, Cl. 370-62.000.

Meier, Friedrich; and Philipp, Hugo, to Mannesmann Aktiengesellschaft; and Rochlingburbach Weiterverarbeiting GmbH. Deburring tubes or pipes on the inside. 4,266,896, Cl. 409-299.000.

Meister, John J., to Phillips Petroleum Company. Sulfonate-cosurfactant mixtures for use in hard brines during oil recovery operations. 4,266,610, Cl. 166-273.000.

Melroe Multi-Wheel: *See—*
Garner, Fay T.; and Joubert, Jerauld D., 4,266,625, Cl. 180-6.480.

Melvin, Terence: *See—*
Martin, Frank S.; Melvin, Terence; and Pieroni, Joseph K., 4,266,772, Cl. 273-218.000.

Menke, Josef F., to ELECTRO-OPTIK GmbH & Co. KG. Apparatus for line-scanning of large image fields. 4,266,847, Cl. 350-6.600.

Merck & Co., Inc.: *See—*
Cama, Lovji D.; and Christensen, Burton G., 4,267,188, Cl. 424-274.000.
Rokach, Joshua; Rooney, Clarence S.; and Cragoe, Edward J., Jr., 4,267,341, Cl. 548-206.000.

Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Bodart, Detlef, 4,266,877, Cl. 356-414.000.

Merenda, Rosario. Filtering device for dry cleaning. 4,266,412, Cl. 68-18.00F.

Mergl, Vernon F., to National Instrument Company, Inc. Stoppering machine. 4,266,653, Cl. 198-392.000.

Merrell Toraude et Compagnie: *See—*
Metcalf, Brian W.; Jung, Michel; and Danzin, Charles, 4,267,374, Cl. 564-509.000.

Merriman, Horace B.: *See—*
Laszlo, Akos; and Merriman, Horace B., 4,266,983, Cl. 134-21.000.

Merritt, Henry B.; and Kite, George F., to Philip Morris Incorporated. Process for puffing tobacco. 4,266,562, Cl. 131-293.000.

Merry, Jack D., to Kendall Company, The. Low friction syringe. 4,266,557, Cl. 128-763.000.

Merz, Karlheinz; and Ulrich, Roland, to Karl Merz Maschinenfabrik. Apparatus for separating waste material contained in a heap. 4,267,037, Cl. 209-481.000.

Mesch, Hans G.; Debenham, Colin H.; and Yasui, Robert K., to TRW Inc. Automatic solar cell glassing machine and method. 4,267,003, Cl. 156-356.000.

Messerschmit-Boelkow-Blohm GmbH: *See—*
Pogoda, Dieter; Petters, Claus; and Rost, Arno, 4,267,147, Cl. 264-571.000.

Metal Leve S.A. Industria e Comercio: *See—*
Mahrus, Duraid; and Paulos, Antonio C., 4,267,241, Cl. 428-645.000.

Metallgesellschaft Aktiengesellschaft: *See—*
Schwartz, Werner; Fischer, Peter; and Traulsen, Heinrich, 4,266,971, Cl. 75-69.000.
Simo, Thomas; and Rammler, Roland, 4,267,061, Cl. 210-772.000.

Metalweld, Inc.: *See—*
Oechsle, Sixtus J., III, 4,267,299, Cl. 528-48.000.

Metcalf, Brian W.; Jung, Michel; and Danzin, Charles, to Merrell Toraude et Compagnie. Derivatives of amines and amino acids. 4,267,374, Cl. 564-509.000.

Metil, Ignatius. Alloys of epoxy and homopolymers of furfuryl alcohol. 4,267,236, Cl. 428-413.000.

Meunier, Francois C.: *See—*
Hutchins, Terence N.; and Meunier, Francois C., 4,266,853, Cl. 350-96.200.

Meyer, Louis H.; and Collins, Ellsworth H., to Interlake, Inc. Accumulating roller conveyor. 4,266,659, Cl. 198-781.000.

Meyer, Peter J. N.; and Penders, Josef M., to Stamicarbon, B.V. Process for the preparation of delta keto-acids and derivatives thereof. 4,267,362, Cl. 560-174.000.

Meyer, Roth & Pastor: *See—*
Heppe, Karl-Julius, 4,267,421, Cl. 219-51.000.

Michl, Rudy; and Wollwage, Peter, to Perdent, GmbH. Material for dental purposes. 4,267,097, Cl. 260-42.150.

Micro-Mega, S.A.: *See—*
Pernot, Jacques, 4,266,934, Cl. 433-85.000.

Microdot Inc.: *See—*
McKewan, Arthur J., 4,266,590, Cl. 411-307.000.

Mikami, Ryuzo: *See—*
Hanada, Tsuneo; and Mikami, Ryuzo, 4,267,297, Cl. 528-18.000.

Miller, John R., to United States of America, Energy. Apparatus for producing cryogenic inertially driven fusion targets. 4,266,506, Cl. 118-725.000.

Miller, Peter A. Travelling sheet, flat-bed vacuum filter and method. 4,267,060, Cl. 210-741.000.

Mills, Stuart D.: *See—*
Johnson, Malcolm; Mills, Stuart D.; and Phillips, Paul J., 4,267,183, Cl. 424-263.000.

Milton, Alan, to Institut Francais du Petrole. Method and device for connecting a floating installation to an underwater installation through at least one flexible line. 4,266,886, Cl. 405-169.000.

Milutzki, Udo; Gaus, Harry; Schotte, Dietwald; and Ramspeck, Klaus, to Braun Aktiengesellschaft. Control mechanisms for pick-up arms of record players. 4,266,783, Cl. 369-41.000.

Mimura, Akitoshi: *See—*
Matsuoka, Hideoki; Oka, Takashi; Mizote, Masanori; Yamaki, Kiyoshi; Nomura, Hiroyuki; Mogi, Takaaki; and Mimura, Akitoshi, 4,267,494, Cl. 318-568.000.

Mimura, Nobuyuki: *See—*
Iwaoka, Shoji; Kaito, Hiroyuki; Anzai, Shigeo; Ushigome, Susumu; Watanabe, Yoshiaki; and Mimura, Nobuyuki, 4,266,970, Cl. 75-59.000.

Minamoto, Toshio: *See—*
Imamura, Kazuo; and Minamoto, Toshio, 4,266,417, Cl. 72-168.000.

Mindey, Marlene S.: *See—*
Graziano, Joseph L., 4,266,298, Cl. 2-22.000.

Minnesota Mining & Manufacturing Company: *See—*
Beck, Boyd R.; Sher, Frank T.; and Tiers, George V. D., 4,267,213, Cl. 427-292.000.
Bresina, Larry J.; and Hipp, Richard D., 4,266,868, Cl. 355-3.0DD.
Chernega, John G., 4,267,238, Cl. 428-422.000.
Guilbert, Curtis R., 4,267,300, Cl. 528-92.000.
Hollingsworth, Elmont E.; Shea, Wm. M.; and Spitzer, Daniel M., Jr., 4,266,863, Cl. 354-5.000.

Minolta Camera Kabushiki Kaisha: *See—*
Hamaguri, Kenji, 4,266,554, Cl. 128-633.000.
Sawa, Seiji, 4,266,861, Cl. 351-7.000.
Wada, Kenichi, 4,267,245, Cl. 430-97.000.

Miripol, Jeffrey E.: *See—*
Grode, Gerald A.; and Miripol, Jeffrey E., 4,267,269, Cl. 435-2.000.

Mishina, Haruhiko: *See—*
Toda, Kashiku; Honda, Moriji; and Mishina, Haruhiko, 4,266,497, Cl. 114-144.00R.

Mita Industrial Company Limited: *See—*
Nishibayashi, Katsumi; Amagai, Yoshimi; Hikake, Norio; Kouchi, Toshihiro; and Aizawa, Tatsuo, 4,267,246, Cl. 430-98.000.

Mitaka Instrument Company Limited: *See—*
Matsuda, Akira; Goshima, Norio; Yasuda, Shigeo; Iwasaki, Motoaki; and Nishino, Hiroshi, 4,267,546, Cl. 340-58.000.

Mitani, Katsuo: *See—*
Mizutani, Yukio; Mitani, Katsuo; and Maehara, Takashi, 4,267,084, Cl. 260-23.0XA.

Mitchell, Wallace F.; and Kamin, Arthur, to Ammco Tools, Inc. Method and apparatus for dampening vibrations during turning of a rotor. 4,266,454, Cl. 82-1.00C.

Mitsubishi Chemical Industries, Ltd.: *See—*
Miura, Konoe; Eguchi, Chihiro; Takahashi, Yoshihiro; Oshima, Akinobu; Torige, Kazuo; and Bunya, Shinichi, 4,267,260, Cl. 430-302.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Kishida, Mitsuhiro, 4,267,400, Cl. 174-31.00R.
Makino, Yoshihiro; and Yoshihara, Toshihiko, 4,266,950, Cl. 55-196.000.
Murakami, Katsuo; Anzai, Yoshinori; Otani, Mitsuoki; and Ito, Hiroshi, 4,267,485, Cl. 313-486.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Toda, Kashiku; Honda, Moriji; and Mishina, Haruhiko, 4,266,497, Cl. 114-144.00R.

Mitsubishi Kakoki Kaisha Ltd.: *See—*
Kobayashi, Yoshio; Ando, Koichi; and Hyodo, Susumu, 4,267,155, Cl. 423-235.000.

Mitsuboshi Belting Ltd.: *See—*
Takano, Hiroshi, 4,266,937, Cl. 474-205.000.

Mitsuhashi, Yuuji, to Dai Nippon Insatsu Kabushiki Kaisha. Method of measuring the amount of reduction of a dot film, and device for practicing same. 4,266,872, Cl. 356-51.000.

Mitsui Petrochemical Industries Ltd.: *See—*
Imai, Ichiro; Hashimoto, Isao; Suzuki, Keiji; and Nakagawa, Hiroaki, 4,267,387, Cl. 568-568.000.

Mitsui Toatsu Chemicals, Incorporated: *See—*
Ozaki, Shoichiro; Ike, Yoshimasa; Ishikawa, Katsutoshi; and Mori, Haruki, 4,267,326, Cl. 544-313.000.

Mitzutani, Tatsumi: *See—*
Iida, Shinya; Ueki, Kazuyoshi; Komatsu, Hideo; and Mitzutani, Tatsumi, 4,267,013, Cl. 156-643.000.

Miura, Konoe; Eguchi, Chihiro; Takahashi, Yoshihiro; Oshima, Akinobu; Torige, Kazuo; and Bunya, Shinichi, to Mitsubishi Chemical Industries, Ltd. Developer for lithographic printing plate. 4,267,260, Cl. 430-302.000.

Miyagi, Hideo: *See—*
Nakano, Jiro; and Miyagi, Hideo, 4,266,521, Cl. 123-491.000.

Miyoshi, Ichiro: *See—*
Yagi, Akira; Miyoshi, Ichiro; and Nogami, Nobusue, 4,267,220, Cl. 428-96.000.

Miyoshi, Tadahiko; and Yamazaki, Takeo, to Hitachi, Ltd. Oxygen sensor ceramic and process for preparing the same. 4,266,979, Cl. 106-57.000.

Miyosi, Juiti: *See—*
Ueno, Hideo; and Miyosi, Juiti, 4,267,219, Cl. 428-90.000.

Mizobe, Akio: *See—*
Okazaki, Masaki; and Mizobe, Akio, 4,267,016, Cl. 162-146.000.

Mizote, Masanori: *See—*
Matsuoka, Hideoki; Oka, Takashi; Mizote, Masanori; Yamaki, Kiyoshi; Nomura, Hiroyuki; Mogi, Takaaki; and Mimura, Akitoshi, 4,267,494, Cl. 318-568.000.

Mizuno, Mamoru; and Tsuzuki, Hanzou, to Casio Computer Co., Ltd. Electronic timepiece circuit. 4,267,587, Cl. 368-85.000.

Mizutani, Yukio; Mitani, Katsuo; and Maehara, Takashi, to Tokuyama Soda Kabushiki Kaisha. Vinyl chloride polymer blend composition. 4,267,084, Cl. 260-23.0XA.

Mobil Oil Corporation: *See—*
Chen, Catherine S. H.; Schmitt, Kirk D.; and Williams, Albert L., 4,267,123, Cl. 260-501.120.
Frangatos, Gerassimos, 4,267,063, Cl. 252-49.900.

Halstead, Louis N., 4,266,607, Cl. 166-244.00C.
Heck, Roland H.; Oleck, Stephen M.; Shih, Stuart S.; and Wilson, Robert C., 4,267,033, Cl. 208-216.0PP.
Jaffe, Stephen B., 4,267,071, Cl. 252-439.000.

Mobil Tyco Solar Energy Corporation: *See—*
Bates, Herbert E.; and Strzepek, Stanley W., 4,267,010, Cl. 156-608.000.
Taylor, Aaron S., 4,267,153, Cl. 422-249.000.
Yates, Douglas A.; Hatch, Arthur E.; and Goldsmith, Jeff M., 4,267,151, Cl. 422-105.000.

Model A and Model T Car Reproduction Corporation, The: *See—*
Sanders, Earl; and Sanders, Daniel, 4,266,792, Cl. 280-153.00R.

Moench, Jerry D.: *See—*
Kung, Roger I.; and Moench, Jerry D., 4,267,466, Cl. 307-279.000.

Mogi, Takaaki: *See—*
Matsuoka, Hideoki; Oka, Takashi; Mizote, Masanori; Yamaki, Kiyoshi; Nomura, Hiroyuki; Mogi, Takaaki; and Mimura, Akitoshi, 4,267,494, Cl. 318-568.000.

Mohr, Siegfried H., to Quantor Corporation. Quick change lens system. 4,266,855, Cl. 350-254.000.

Molitors, Thomas J., to Karg Corporation. Tandem braiding system and components thereof. 4,266,461, Cl. 87-29.000.

Molnar, Charles J.: *See—*
Grot, Walther G.; Molnar, Charles J.; and Resnick, Paul R., 4,267,364, Cl. 560-183.000.

Momma, Naohiro; and Taniguchi, Hiroyuki, to Hitachi, Ltd. Process for diffusion of aluminum into a semiconductor. 4,266,990, Cl. 148-189.000.

Monaco, George, to Stella D'oro Biscuit Co. Inc. Seed applying apparatus for food products. 4,266,502, Cl. 118-16.000.

Monarch Marking Systems, Inc.: *See—*
Karn, Donald L.; and Makley, James A., 4,267,006, Cl. 156-384.000.

Moninger, Friedrich: *See—*
Kohler, Ernst; and Moninger, Friedrich, 4,267,226, Cl. 428-223.000.

Monk, Robert J. Energy rays tracking device. 4,267,441, Cl. 250-203.00R.

Monnet, Andre A.: *See—*
Duperray, Gilbert; Monnet, Andre A.; and Tournut, Claude, 4,267,237, Cl. 428-422.000.

Monsanto Company: *See—*
Tokas, Edward F., 4,267,282, Cl. 525-86.000.

Mookherjee, Braja D.; Mussinan, Cynthia J.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., to International Flavors & Fragrances Inc. Preparation of a caryophyllene alcohol mixture in perfume compositions. 4,267,076, Cl. 252-522.00R.

Mookherjee, Braja D.: *See—*
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Granda, Edward J.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,267,066, Cl. 252-174.110.

Moore, Thomas G.: *See—*
Karpinsky, John R.; and Moore, Thomas G., 4,267,561, Cl. 358-82.000.

Moresi, Joseph A., Jr., to Sprague Electric Company. Sealed flat electrolytic capacitor and method. 4,267,566, Cl. 361-433.000.

Moret, Michel A., to Les Produits Associes BPA SA. Diagnostic lamp. 4,266,535, Cl. 128-23.000.

Morgan, Grant T.: *See—*
Moyroud, Louis M.; Morgan, Grant T.; and Casanova, Bernard A., 4,266,864, Cl. 354-15.000.

Mori, Haruki: *See—*
Ozaki, Shoichiro; Ike, Yoshimasa; Ishikawa, Katsutoshi; and Mori, Haruki, 4,267,326, Cl. 544-313.000.

Morie, Gerald P.: *See—*
Sloan, Cephas H.; Wright, Jerry A.; and Morie, Gerald P., 4,267,002, Cl. 156-276.000.

Morikawa, Michio: *See—*
Hayashi, Torahiko; Kageyama, Minoru; and Morikawa, Michio, 4,266,920, Cl. 425-133.100.

Morikawa, Yoshiyuki: *See—*
Sasaki, Umekichi; Tsunemi, Masaaki; Yamada, Kaichi; and Morikawa, Yoshiyuki, 4,267,064, Cl. 252-52.00A.

Morishita Pharm.: *See—*
Hashino, Yasuo; Hayano, Fusakazu; and Toyomoto, Kazuo, 4,267,053, Cl. 210-650.000.

Moriya, Mitsumasa: *See—*
Yoritomi, Kenzaburo; Kezuka, Teruo; and Moriya, Mitsumasa, 4,267,054, Cl. 210-659.000.

Moriya, Yoshiaki: *See—*
Kobayashi, Ichiro; Moriya, Yoshiaki; and Kitagawa, Yukio, 4,267,581, Cl. 364-900.000.

Morohashi, Hisao, to Ohno Research and Development Laboratories Company Limited. Thin schaukasten. 4,267,489, Cl. 315-324.000.

Moss, James P. Portable suction device for collecting fluids from a closed wound. 4,266,545, Cl. 128-278.000.

Moss, Jerome A. Shelf display. 4,266,355, Cl. 40-124.100.

Motoren-und Turbinen-Union Munchen GmbH: *See—*
Schweikl, Ludwig; Greune, Christian; and Lottes, Paul, 4,266,725, Cl. 239-265.190.

Motorola, Inc.: *See—*
Hilliker, Stephen E., 4,267,468, Cl. 307-310.000.
Kung, Roger I.; and Moench, Jerry D., 4,267,466, Cl. 307-279.000.
Smith, Stephen L., 4,267,501, Cl. 323-313.000.

Motta, Raimondo, to Oxon Italia S.p.A. Heterocyclic chemical compound 6-phenyl-[1,2,3]-oxadiazolo-(4,5 d)-pyridazine-7(6H)-one and process for producing it. 4,267,323, Cl. 544-236.000.

Motz, Herbert; Schaefer, Dieter; Huebner, Werner; and Mayer, Dieter, to BASF Aktiengesellschaft. Manufacture of magnetic recording media. 4,267,203, Cl. 427-48.000.

Moulton, Robert H.: *See—*
Trueblood, Troy M.; and Moulton, Robert H., 4,267,118, Cl. 260-428.000.

Moyroud, Louis M.; Morgan, Grant T.; and Casanova, Bernard A., to Bobst, S.A. Mask device for photocomposing machines. 4,266,864, Cl. 354-15.000.

Mueller, Georg; and Weiss, Herbert, to Mueller, Georg; and Weiss, Herbert. Apparatus for manufacturing high quality crystals. 4,267,154, Cl. 422-249.000.

Mueller, Karl F., to Ciba-Geigy Corporation. Perfluoroalkyl substituted anhydrides and polyacids, and derivatives thereof. 4,267,087, Cl. 260-29.2EP.

Mueller, Otto, Jr., to Massey-Ferguson Inc. Draft sensing apparatus wherein effect of vertical deflection reduced to insignificant levels compared to horizontal deflection. 4,266,616, Cl. 172-7.000.

Muench, Helen S. Ornamental and protective collar for an animal collar. 4,266,511, Cl. 119-106.000.

Muenstedt, Helmut, to BASF Aktiengesellschaft. Apparatus for determining the stress-strain properties of viscoelastic materials in the molten state. 4,266,424, Cl. 73-15.600.

Mukai, Tadao; and Takatani, Teruhika, to Toyo Kogyo Co., Ltd. Lock remote control. 4,266,816, Cl. 292-129.000.

Muller, Hans, to Muller, Ing Hans, Dr. Method of recovering products of high protein content from protein-polysaccharide complexes. 4,267,275, Cl. 435-272.000.

Muller, Hans-Jurgen, to Pierburg GmbH & Co. Kg. Fuel-air mixture arrangement with an air-compressing super-charger for a combustion engine. 4,266,520, Cl. 123-454.000.

Muller, Hans-Ueli: *See—*
Festag, Werner; and Muller, Hans-Ueli, 4,266,416, Cl. 72-60.000.

Muller, Ing Hans, Dr.: *See—*
Muller, Hans, 4,267,275, Cl. 435-272.000.

Muller, Lisbet: *See—*
Lindner, Heinz; Stopp, Fritz; Georgie, Wolfgang; Oehm, Werner; Muller, Lisbet; and Graubner, Brigitte, 4,266,411, Cl. 66-84.00R.

Mullet, David L.; Rilling, Raymond J.; and Voth, Elmer D., to Excel Industries, Inc. Tractor with full-floating tool bar. 4,266,617, Cl. 172-76.000.

Mumola, Joanne L.: *See—*
Boyd, Clay E.; Jones, John C.; and Mumola, Joanne L., 4,267,555, Cl. 340-748.000.

Murakami, Katsuo; Anzai, Yoshinori; Otani, Mitsuoki; and Ito, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Fluorescent lamp with sharp emission peaks betwen 480 and 490 nm and between 620 and 640 nm. 4,267,485, Cl. 313-486.000.

Muramoto, Ken-ichi; Tani, Keizo; Tomisawa, Yutaka; and Hideshima, Makoto, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor device. 4,267,557, Cl. 357-20.000.

Muraoka, Yasuhiko: *See—*
Fujii, Akio; Fukuoka, Takeyo; Muraoka, Yasuhiko; Takita, Tomohisa; and Umezawa, Hamao, 4,267,102, Cl. 260-112.50R.

Murata Manufacturing Co., Ltd.: *See—*
Kanematsu, Tetsuo; and Taki, Tsuneo, 4,267,480, Cl. 310-366.000.

Murata, Masahiro, to Hope Co., Ltd. Ski braking device. 4,266,804, Cl. 280-605.000.

Murphy, Patrick, to Boeing Company, The. Mounting apparatus for fan jet engine having mixed flow nozzle installation. 4,266,741, Cl. 244-54.000.

Murray, John A., to U.S. Terrazzo Panels, Inc. Method and apparatus for the manufacture of concrete and like products. 4,266,921, Cl. 425-158.000.

Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Granda, Edward J.; Vinals, Joaquin F.; and Kiwala, Jacob, to International Flavors & Fragrances Inc. Process for augmenting or enhancing the aroma of detergent using derivatives of cis-3-hexenol. 4,267,066, Cl. 252-174.110.

Mussinan, Cynthia J.: *See—*
Mookherjee, Braja D.; Mussinan, Cynthia J.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,267,076, Cl. 252-522.00R.

Musso, Charles S., Jr., to Air-Flo Manufacturing Co., Inc. Dump spreader. 4,266,731, Cl. 239-676.000.

Mutti, Werner H. Method and apparatus for storing heat energy. 4,266,598, Cl. 165-1.000.

Myers, Bruce P.: *See—*
Wronski, Christopher R.; and Myers, Bruce P., 4,266,984, Cl. 136-255.000.

Myers-Europe Pumpen GmbH: *See—*
Kruger, Burkhard, 4,266,709, Cl. 226-181.000.

Myers, June L. Collapsible and carryable cart. 4,266,791, Cl. 280-37.000.

Mykleby, Laurie G., to First National Packaging Co., Inc. Collapsible reinforced container. 4,266,670, Cl. 206-600.000.

N.B.E. Corporation: *See—*
Olschefski, Robert D., 4,266,346, Cl. 33-174.00Q.

Nagai, Minoru: *See—*
Nakajima, Koichi; Ishiguro, Tomoji; Okamoto, Tokuhiko; Konaka, Minoru; Nagai, Minoru; Higuchi, Kanji; and Sasaki, Kenji, 4,267,483, Cl. 313-143.000.

Nagao, Kameji: *See—*
Sugimoto, Naohiko; Horie, Ikutaro; Nagao, Kameji; Yoneyama, Masakazu; Nakayama, Yasuhiro; and Yamamoto, Nobuo, 4,267,265, Cl. 430-523.000.

Nagaoka, Shinji: *See*—
Kitai, Kiyoshi; Nagaoka, Shinji; and Takazawa, Yuzuru, 4,267,440, Cl. 250-201.000.
Nagayasu, Koichi: *See*—
Shibue, Toshiaki; and Nagayasu, Koichi, 4,267,266, Cl. 430-530.000.
Naito, Jiro: *See*—
Yoneda, Yasuhiro; Kitamura, Kenro; Naito, Jiro; and Kitakohji, Toshisuke, 4,267,258, Cl. 430-270.000.
Naito, Kazuaki; Tetekawa, Takaiki; Sogo, Shigeyuki; Higaki, Kazuhiko; Yasuoka, Tetu; and Hosoi, Hidetoshi, to Ohbayashi-Gumi Ltd.; and Nichireki Chemical Industry Co., Ltd. Method of constructing a continuous cut-off wall and a core of a fill-type dam. 4,266,885, Cl. 405-109.000.
Najer, Henry; and Manoury, Philippe, to Synthelabo. 1-Phenylpiperazines. 4,267,328, Cl. 544-394.000.
Nakagawa, Akira, to Nifco Inc. Tape reel. 4,266,738, Cl. 242-74.100.
Nakagawa, Hiroaki: *See*—
Imai, Ichiro; Hashimoto, Isao; Suzuki, Keiji; and Nakagawa, Hiroaki, 4,267,387, Cl. 568-568.000.
Nakagawa, Toshiharu: *See*—
Uehara, Tsutomu; Oguchi, Toshihiko; Kubo, Tsutomu; Suzuki, Yukio; Nakagawa, Toshiharu; and Saito, Ichiyoshi, 4,266,503, Cl. 118-657.000.
Nakagawa, Yuzo; Iwatani, Kouji; and Kadono, Tetsuro, to Shionogi & Co., Ltd. Sample holding element for mass spectrometer. 4,267,457, Cl. 250-522.000.
Nakagima, Shigeo; Takahashi, Ken; and Endo, Hajime, to Taiheiyo Engineering Inc. Apparatus on drum shearer for cutting through safety wall in long wall mining. 4,266,828, Cl. 299-53.000.
Nakaguti, Osamu: *See*—
Kamiya, Takashi; Saito, Yoshihisa; Teraji, Tsutomu; Nakaguti, Osamu; and Oku, Teruo, 4,267,340, Cl. 548-187.000.
Nakahara, Tosio; Yano, Hidetoshi; and Kasahara, Nobuo, to Ricoh Company, Ltd. Magnetic brush development apparatus and method. 4,267,201, Cl. 427-27.000.
Nakai, Masaaki: *See*—
Ohba, Shinya; Takemoto, Iwao; Nakai, Masaaki; Ando, Haruhisa; and Kubo, Masaharu, 4,267,469, Cl. 307-311.000.
Nakai, Yoshiharu: *See*—
Kamiya, Takashi; Teraji, Tsutomu; Nakai, Yoshiharu; Sakane, Kazuo; and Goto, Jiro, 4,267,176, Cl. 424-246.000.
Nakajima, Koichi; Ishiguro, Tomoji; Okamoto, Tokuhiko; Konaka, Minoru; Nagai, Minoru; Higuchi, Kanji; and Sasaki, Kenji, to Kabushiki Kaisha Toyota Chuo; and Nippondenso Co., Ltd. Insulator on spark plug electrode coated with zirconium and vanadium oxides. 4,267,483, Cl. 313-143.000.
Nakamichi Research Inc.: *See*—
Terui, Nobuo; and Kobayashi, Kozo, 4,267,515, Cl. 328-147.000.
Nakano, Jiro; and Miyagi, Hideo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method of fuel injection control during starting. 4,266,521, Cl. 123-491.000.
Nakano, Masao: *See*—
Takemae, Yoshihiro; and Nakano, Masao, 4,267,464, Cl. 307-463.000.
Nakatsuka, Asao: *See*—
Sakanoue, Seiki; Waki, Kokichi; Tsubota, Motohiko; Takahashi, Osamu; and Nakatsuka, Asao, 4,267,250, Cl. 430-214.000.
Nakayama, Hiroyuki; and Nezu, Tsuguo, to Kansai Paint Co., Ltd. Method for modifying the surface properties of polymer substrates. 4,267,202, Cl. 427-40.000.
Nakayama, Yasuhiro: *See*—
Sugimoto, Naohiko; Horie, Ikutaro; Nagao, Kameji; Yoneyama, Masakazu; Nakayama, Yasuhiro; and Yamamoto, Nobuo, 4,267,265, Cl. 430-523.000.
Nakayama, Yoshiaki: *See*—
Yokoyama, Takayuki; Nakayama, Yoshiaki; and Yasuda, Yasuo, 4,267,080, Cl. 260-4.00R.
Nakazato, Masao: *See*—
Yoneda, Kanji; Yuminaka, Takeo; and Nakazato, Masao, 4,266,632, Cl. 187-29.00R.
Nakazawa, Kiwao; and Tanimoto, Akikazu, to Nippon Kogaku K.K. Automatic alignment apparatus. 4,266,876, Cl. 356-400.000.
Namboodri, Chettoor G.: *See*—
Gregorian, Razmic S.; and Namboodri, Chettoor G., 4,266,976, Cl. 106-2.000.
Nara, Ryuichi: *See*—
Shimatake, Hirokazu; Ogawa, Shuichi; Uchida, Shigeru; Nara, Ryuichi; and Takagishi, Haruyoshi, 4,267,424, Cl. 219-86.410.
Narikiyo, Tatsuichi, to Denki Onkyo Co., Ltd. Deflection yoke apparatus with convergence device for in-line color television cathode-ray tube. 4,267,541, Cl. 335-212.000.
Nasu, Rikuo: *See*—
Nishiyama, Ryuzo; Fujikawa, Kanichi; Nasu, Rikuo; and Shigehara, Itaru, 4,267,336, Cl. 546-302.000.
National Distillers and Chemical Corp.: *See*—
Heimberg, Manfred; and Rekers, Louis J., 4,267,090, Cl. 260-29.60R.
Smith, David W., 4,267,384, Cl. 568-462.000.
National Instrument Company, Inc.: *See*—
Mergl, Vernon F., 4,266,653, Cl. 198-392.000.
National Semiconductor Corporation: *See*—
Cecil, James B., 4,267,550, Cl. 340-347.0DA.
Nawa, Motoyuki; Takahashi, Yutaka; and Sugawara, Norio, to Matsushita Electric Industrial Co., Ltd. Fluid deflecting assembly. 4,266,722, Cl. 239-590.500.
Neely, James W., to Rohm and Haas Company. Separation of more planar molecules from less planar molecules. 4,267,055, Cl. 210-670.000.
Nefedov, Boris K.; Manov-Juvensky, Vladimir I.; Dergunov, Jury I.; Rysikhin, Anatoly I.; and Chimishkian, Alexandr L. Catalyst for the synthesis of aromatic monoisocyanates. 4,267,070, Cl. 252-429.00R.
Nehmiz, Peter: *See*—
Bohlen, Harald; Greschner, Johann; Kulcke, Werner; and Nehmiz, Peter, 4,267,259, Cl. 430-296.000.
Nelson, Dean R.: *See*—
Marsh, Edward K.; and Nelson, Dean R., 4,266,843, Cl. 339-97.00R.
Nelson, John R., to Research, Development & Marketing, Inc. Dispenser for cup-shaped filters. 4,266,665, Cl. 206-445.000.
Nelson, Robert A., Jr. Spermatozoa extenders. 4,267,268, Cl. 435-2.000.
Nelson, Robert F.: *See*—
Conway, Richard A.; and Nelson, Robert F., 4,267,050, Cl. 210-608.000.
Network Systems Development Associates: *See*—
Cohn, Nathan, 4,267,571, Cl. 364-493.000.
Neustadt, Bernard R.; and Gold, Elijah H., to Schering Corporation. N-substituted-4-(polyfluoro-2-hydroxy-2-propyl)anilines and compounds related thereto. 4,267,193, Cl. 424-309.000.
Newman, George R., to Canron Corporation. Ballast side plow. 4,266,352, Cl. 37-105.000.
Newman, George R., to Canron Corporation. Device for plowing ballast. 4,266,353, Cl. 37-105.000.
Neyer, Johannes: *See*—
Bornefeld, Horst; Comberg, Gerd; Engel, Werner; and Neyer, Johannes, 4,266,373, Cl. 51-99.000.
Nezu, Tsuguo: *See*—
Nakayama, Hiroyuki; and Nezu, Tsuguo, 4,267,202, Cl. 427-40.000.
NHK Spring Co., Ltd.: *See*—
Sakai, Yoshihiro; and Takahashi, Jun, 4,266,418, Cl. 72-197.000.
Nichireki Chemical Industry Co., Ltd.: *See*—
Naito, Kazuaki; Tetekawa, Takaiki; Sogo, Shigeyuki; Higaki, Kazuhiko; Yasuoka, Tetu; and Hosoi, Hidetoshi, 4,266,885, Cl. 405-109.000.
Nicolaides, Ernest D.: *See*—
Haskell, Theodore H.; Hutt, Marland P., Jr.; and Nicolaides, Ernest D., 4,267,180, Cl. 424-251.000.
Nidola, Antonio: *See*—
de Nora, Vittorio; Nidola, Antonio; Spaziante, Placido M.; and Bianchi, Giuseppe, 4,267,025, Cl. 204-82.000.
Niebylski, Leonard M., to Ethyl Corporation. Gasoline containing exhaust emission reducing additives. 4,266,946, Cl. 44-68.000.
Nielsen, Robert P.; and Jecminek, Albert A., to Shell Oil Company. Ethylene oxide catalyst. 4,267,073, Cl. 252-455.00R.
Niessen, Heinz J.: *See*—
Kersting, Elmar; and Niessen, Heinz J., 4,266,962, Cl. 71-90.000.
Nifco Inc.: *See*—
Nakagawa, Akira, 4,266,738, Cl. 242-74.100.
Niimi, Hiroshi: *See*—
Hasegawa, Junzo; Kawabata, Susumu; Niimi, Hiroshi; Suzuki, Yasuhiko; Akatsuka, Masaki; and Tsunekawa, Takahiko, 4,266,324, Cl. 19-239.000.
Niimi, Yukihisa; and Saegusa, Katsumi, to Kao Soap Co., Ltd. Detergent composition for dry cleaning. 4,267,077, Cl. 252-545.000.
Niizuma, Hiroshi: *See*—
Sumikawa, Seiji; Niizuma, Hiroshi; Tonegawa, Hiromichi; Torizuka, Tsuneo; Furuya, Yoichiro; and Takashima, Norio, 4,266,604, Cl. 165-176.000.
Nilsson, Dan L.; and Danielsson, Joel L., to Saab-Scania Aktiebolag. Power unit suspension in motor vehicles. 4,266,630, Cl. 180-291.000.
Ninomiya, Youichi; Ogawa, Hirotoshi; Ueda, Tomoyuki; and Machida, Masataka, to Asahi Yukizai Kogyo Co., Ltd. Butterfly valve assembly. 4,266,754, Cl. 251-306.000.
Nippon Cable System Inc.: *See*—
Berens, Mathew, 4,266,440, Cl. 74-501.00R.
Nippon Electric Co., Ltd.: *See*—
Mayumi, Hiroshi, 4,267,463, Cl. 307-445.000.
Suzuki, Masao, 4,267,583, Cl. 365-201.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Yokoyama, Kenji, 4,267,521, Cl. 330-288.000.
Nippon Kayaku Kabushiki Kaisha: *See*—
Fujii, Akio; Fukuoka, Takeyo; Muraoka, Yasuhiko; Takita, Tomohisa; and Umezawa, Hamao, 4,267,102, Cl. 260-112.50R.
Nippon Kogaku K.K.: *See*—
Fukuhara, Toru, 4,266,865, Cl. 354-46.000.
Hayashi, Kiyoshi, 4,266,860, Cl. 350-426.000.
Nakazawa, Kiwao; and Tanimoto, Akikazu, 4,266,876, Cl. 356-400.000.
Nippon Kokan Kabushiki Kaisha: *See*—
Ando, Seigo, 4,267,508, Cl. 324-225.000.
Nippon Oil Company, Ltd.: *See*—
Katoh, Yasuo; Kakegawa, Hideo; Hayashi, Shigeyuki; and Yamashita, Tadakazu, 4,267,085, Cl. 260-28.5AS.
Sasaki, Umekichi; Tsunemi, Masaaki; Yamada, Kaichi; and Morikawa, Yoshiyuki, 4,267,064, Cl. 252-52.00A.
Nippon Soken, Inc.: *See*—
Iwata, Toshiharu; and Hattori, Tadashi, 4,267,482, Cl. 313-143.000.
Nishida, Minoru; Hattori, Tadashi; and Yamaguchi, Hiroaki, 4,266,518, Cl. 123-416.000.

Nippondenso Co., Ltd.: *See*—
Nakajima, Koichi; Ishiguro, Tomoji; Okamoto, Tokuhiko; Konaka, Minoru; Nagai, Minoru; Higuchi, Kanji; and Sasaki, Kenji, 4,267,483, Cl. 313-143.000.
Norimatsu, Hideaki; and Furuta, Koichi, 4,266,519, Cl. 123-440.000.

Nishibayashi, Katsumi; Amagai, Yoshimi; Hikake, Norio; Kouchi, Toshihiro; and Aizawa, Tatsuo, to Mita Industrial Company Limited. Pressure or heated roller electrophoto image fixing uses halogen or nitrile containing polymer dispersed within resin binder as offset prevent toner. 4,267,246, Cl. 430-98.000.

Nishida, Minoru; Hattori, Tadashi; and Yamaguchi, Hiroaki, to Nippon Soken, Inc. Method of controlling ignition timing for internal combustion engines and apparatus for carrying out the same. 4,266,518, Cl. 123-416.000.

Nishikawa, Tetsuji: *See*—
Nishiyama, Ryuzo; Kimura, Fumio; Haga, Takahiro; Sakashita, Nobuyuki; and Nishikawa, Tetsuji, 4,266,963, Cl. 71-92.000.

Nishikawa, Toshio: *See*—
Higashiyama, Takao; and Nishikawa, Toshio, 4,266,975, Cl. 106-1.120.

Nishimura, Hideo; Tokura, Yasufumi; Unno, Kunihiko; Enomoto, Minoru; Yokoe, Isamu; Shimizu, Norihiko; and Ohmura, Haruo, to Toyoda-Koki Kabushiki-Kaisha. Feed control apparatus for a machine tool carriage. 4,266,375, Cl. 51-165.710.

Nishimura, Toshio: *See*—
Hashimoto, Shintaro; and Nishimura, Toshio, 4,267,577, Cl. 364-707.000.

Nishino, Hiroshi: *See*—
Matsuda, Akira; Goshima, Norio; Yasuda, Shigeo; Iwasaki, Motoaki; and Nishino, Hiroshi, 4,267,546, Cl. 340-58.000.

Nishiyama, Ryuzo; Kimura, Fumio; Haga, Takahiro; Sakashita, Nobuyuki; and Nishikawa, Tetsuji, to Ishihara Sangyo Kaisha Ltd. Pyrazole derivatives, herbicidal compositions containing the same, and a process for the preparation of the same. 4,266,963, Cl. 71-92.000.

Nishiyama, Ryuzo; Fujikawa, Kanichi; Nasu, Rikuo; and Shigehara, Itaru, to Ishihara Sangyo Kaisha Ltd. Process for producing 4-(pyridyl-2-oxy)-phenoxyalkanecarboxylic acid or its derivatives. 4,267,336, Cl. 546-302.000.

Nishizawa, Masahiro: *See*—
Tomita, Yoshifumi; Nishizawa, Masahiro; and Fujimura, Takashi, 4,267,204, Cl. 427-68.000.

Nissan Motor Company, Limited: *See*—
Inamoto, Hiroshi, 4,266,824, Cl. 296-210.000.
Matsuoka, Hideoki; Oka, Takashi; Mizote, Masanori; Yamaki, Kiyoshi; Nomura, Hiroyuki; Mogi, Takaaki; and Mimura, Akitoshi, 4,267,494, Cl. 318-568.000.
Sato, Fumiyoshi, 4,266,836, Cl. 312-246.000.
Shimatake, Hirokazu; Ogawa, Shuichi; Uchida, Shigeru; Nara, Ryuichi; and Takagishi, Haruyoshi, 4,267,424, Cl. 219-86.410.
Sunohara, Yoshio, 4,266,641, Cl. 192-3.280.

Nitta, Minoru; Kajinaga, Yoshihiro; Sakurada, Ichio; Ogura, Kuniaki; and Ito, Shunji, to Kawasaki Steel Corporation. Alloy steel powder having excellent compressibility, moldability and heat-treatment property. 4,266,974, Cl. 75-251.000.

NL Industries, Inc.: *See*—
Byerley, Thomas L., 4,267,062, Cl. 252-8.55R.
Kroplinski, Thaddeus F.; and Case, Barton C., 4,267,044, Cl. 210-321.200.

Nobel, Michael D.: *See*—
Phillips, John C.; and Nobel, Michael D., 4,266,358, Cl. 42-39.500.

Nogami, Nobusue: *See*—
Yagi, Akira; Miyoshi, Ichiro; and Nogami, Nobusue, 4,267,220, Cl. 428-96.000.

Nohara, Akira; Ishiguro, Toshihiro; and Ukawa, Kiyoshi, to Takeda Chemical Industries, Ltd. 3-(Tetrazol-5-yl)-1-azaxanthones. 4,267,332, Cl. 546-89.000.

Nomura, Hiroki; Mafune, Masao; and Koyanagi, Masaru, to Citizen Watch Co., Ltd. Method of boring a hole through a magnet made of an intermetallic compound. 4,267,427, Cl. 219-121.0LL.

Nomura, Hiroshi, to Diesel Kiki Co., Ltd. Swash-plate type compressor. 4,266,913, Cl. 417-269.000.

Nomura, Hiroyuki: *See*—
Matsuoka, Hideoki; Oka, Takashi; Mizote, Masanori; Yamaki, Kiyoshi; Nomura, Hiroyuki; Mogi, Takaaki; and Mimura, Akitoshi, 4,267,494, Cl. 318-568.000.

Nordstrom, Kjell H.; Dillon, Benny N.; and Susor, William C., to Masstron Scale, Inc. Weighing apparatus. 4,266,624, Cl. 177-253.000.

Norimatsu, Hideaki; and Furuta, Koichi, to Nippondenso Co., Ltd. System for controlling an oxygen concentration in exhaust gases. 4,266,519, Cl. 123-440.000.

Norlin Industries, Inc.: *See*—
Auer, Siegfried O., 4,266,878, Cl. 356-419.000.
Gross, Glenn M., 4,267,579, Cl. 364-718.000.

North, Merle W., to Beloit Corporation. Drainage roof for twin wire roll former. 4,267,017, Cl. 162-190.000.

Northern Telecom Limited: *See*—
Hutchins, Terence N.; and Meunier, Francois C., 4,266,853, Cl. 350-96.200.

Nothhelfer, Gunther: *See*—
Daldrup, Heinz G.; Nothhelfer, Gunther; Franke, Friedrich H.; and Limpach, Raymond, 4,266,968, Cl. 75-42.000.

Novikov, Vladislav I.: *See*—
Ivanov, Gely M.; Novikov, Vladislav I.; and Khmelev, Vladimir V., 4,267,496, Cl. 318-615.000.

Nygaard, Kurt; Mattsson, Kjell; and Bratt, Sven-Erik, to Aktiebolaget Bofors. Electric igniter. 4,267,567, Cl. 362-46.000.

Nyman, Alice: *See*—
Nyman, Bo, 4,266,368, Cl. 46-232.000.

Nyman, Bo, to Nyman, Alice. Device for generating a synchronous sound referring to a model railway engine. 4,266,368, Cl. 46-232.000.

Oare, Arthur A.; and Wonderling, Harold J., to Air Preheater Company, Inc., The. Holder for bag filter. 4,266,954, Cl. 55-341.00R.

Obergfell, Bruno, to Warner Electric Brake & Clutch Company. Ball screw and nut assembly. 4,266,437, Cl. 74-424.80R.

Occidental Oil Shale, Inc.: *See*—
French, Gordon B., 4,266,612, Cl. 166-299.000.
French, Gordon B., 4,266,826, Cl. 299-2.000.

Occidental Research Corporation: *See*—
Parziale, Victor E.; Dines, Martin B.; and DiGiacomo, Peter M., 4,267,308, Cl. 528-395.000.

Oceanography International Corporation: *See*—
Fredericks, Alan D., 4,266,681, Cl. 215-32.000.

Oechsle, Sixtus J., III, to Metalweld, Inc. Method of curing isocyanate-terminated polyurethane prepolymers for use in solventless spray applications. 4,267,299, Cl. 528-48.000.

Oehlert, James A. Interlocking building panel construction. 4,266,385, Cl. 52-521.000.

Oehm, Werner: *See*—
Lindner, Heinz; Stopp, Fritz; Georgie, Wolfgang; Oehm, Werner; Muller, Lisbet; and Graubner, Brigitte, 4,266,411, Cl. 66-84.00R.

Oellerer, Friedrich: *See*—
Theurer, Josef; and Oellerer, Friedrich, 4,266,615, Cl. 171-16.000.

Officine Meccaniche Odolini Catullo s.a.s. di Roberto Gandini & C.: *See*—
Gandini, Roberto, 4,266,426, Cl. 73-119.00A.

Offset Newspaper Equipment Inc.: *See*—
Surbrook, Louis M., 4,266,903, Cl. 414-428.000.

Ogawa, Hirotoshi: *See*—
Ninomiya, Youichi; Ogawa, Hirotoshi; Ueda, Tomoyuki; and Machida, Masataka, 4,266,754, Cl. 251-306.000.

Ogawa, Mototugu, to Olympus Optical Co., Ltd. Illumination unit for endoscope. 4,266,534, Cl. 128-6.000.

Ogawa, Shuichi: *See*—
Shimatake, Hirokazu; Ogawa, Shuichi; Uchida, Shigeru; Nara, Ryuichi; and Takagishi, Haruyoshi, 4,267,424, Cl. 219-86.410.

Oguchi, Toshihiko: *See*—
Uehara, Tsutomu; Oguchi, Toshihiko; Kubo, Tsutomu; Suzuki, Yukio; Nakagawa, Toshiharu; and Saito, Ichiyoshi, 4,266,503, Cl. 118-657.000.

Ogura, Kuniaki: *See*—
Nitta, Minoru; Kajinaga, Yoshihiro; Sakurada, Ichio; Ogura, Kuniaki; and Ito, Shunji, 4,266,974, Cl. 75-251.000.

Ohba, Shinya; Takemoto, Iwao, Nakai, Masaaki; Ando, Haruhisa; and Kubo, Masaharu, to Hitachi, Ltd. Solid-state imaging device having a clamping circuit for drawing out excess charge. 4,267,469, Cl. 307-311.000.

Ohbayashi-Gumi Ltd.: *See*—
Naito, Kazuaki; Tetekawa, Takaiki; Sogo, Shigeyuki; Higaki, Kazuhiko; Yasuoka, Tetu; and Hosoi, Hidetoshi, 4,266,885, Cl. 405-109.000.

Ohdan, Kyoji: *See*—
Umemura, Sumio; Ohdan, Kyoji; and Asada, Hiroyuki, 4,267,385, Cl. 568-479.000.

Ohishi, Saburo, to Oishikikai Mfg. Co., Ltd. Equipment for separating foreign matter from liquid papermaking materials. 4,267,048, Cl. 210-512.200.

Ohkuni, Shinichiro: *See*—
Takigawa, Hiroyoshi; Arimura, Iwao; Tanaka, Makoto; and Ohkuni, Shinichiro, 4,266,592, Cl. 152-209.00D.

Ohmori, Akira, to Daikin Kogyo Co., Ltd. Epoxy resin composition containing perfluoroalkyl epoxide. 4,267,302, Cl. 528-103.000.

Ohmori, Taiji: *See*—
Sato, Makoto; Ohmori, Taiji; and Tsuchiya, Yoshikazu, 4,266,833, Cl. 303-106.000.

Ohmura, Haruo: *See*—
Nishimura, Hideo; Tokura, Yasufumi; Unno, Kunihiko; Enomoto, Minoru; Yokoe, Isamu; Shimizu, Norihiko; and Ohmura, Haruo, 4,266,375, Cl. 51-165.710.

Ohnishi, Masahiro: *See*—
Kimura, Tsutomu; and Ohnishi, Masahiro, 4,267,548, Cl. 340-146.3AH.

Ohno Research and Development Laboratories Company Limited: *See*—
Morohashi, Hisao, 4,267,489, Cl. 315-324.000.

Ohta, Norio; Ishida, Fumihiko; Ikeda, Tadashi; Ando, Keikichi; and Sugita, Yutaka, to Hitachi, Ltd. Film for a magnetic bubble domain device. 4,267,230, Cl. 428-336.000.

Ohtsu, Ikuo: *See*—
Kikuchi, Makoto; and Ohtsu, Ikuo, 4,266,377, Cl. 51-262.00T.

Oishikikai Mfg. Co., Ltd.: *See*—
Ohishi, Saburo, 4,267,048, Cl. 210-512.200.

Oka, Takashi: *See*—
Matsuoka, Hideoki; Oka, Takashi; Mizote, Masanori; Yamaki, Kiyoshi; Nomura, Hiroyuki; Mogi, Takaaki; and Mimura, Akitoshi, 4,267,494, Cl. 318-568.000.

Okada, Yoshitsugu, to Kubota, Ltd. Butterfly valve. 4,266,753, Cl. 251-305.000.

Okamoto, Tokuhiko: *See*—
Nakajima, Koichi; Ishiguro, Tomoji; Okamoto, Tokuhiko; Konaka, Minoru; Nagai, Minoru; Higuchi, Kanji; and Sasaki, Kenji, 4,267,483, Cl. 313-143.000.

Okamura, Kiyohito: *See*—
Yajima, Seishi; Okamura, Kiyohito; Shishido, Toetsu; and Hasegawa, Yoshio, 4,267,210, Cl. 427-226.000.
Yajima, Seishi; Okamura, Kiyohito; Shishido, Toetsu; and Hasegawa, Yoshio, 4,267,211, Cl. 427-228.000.

Okazaki, Masaki; and Mizobe, Akio. Polyvinyl alcohol fiber for binding a fibrous sheet and a process for the preparation thereof. 4,267,016, Cl. 162-146.000.

Oki, Toshikazu; Yoshimoto, Akihiro; Inui, Taiji; Takeuchi, Tomio; and Umezawa, Hamao, to Sanraku-Ocean Co., Ltd. Anthracycline derivatives and process for preparing the same. 4,267,312, Cl. 536-17.00A.

Oksanen, Martti T.: *See*—
Haltsonen, Eino J.; and Oksanen, Martti T., 4,267,018, Cl. 162-200.000.

Oku, Teruo: *See*—
Kamiya, Takashi; Saito, Yoshihisa; Teraji, Tsutomu; Nakaguti, Osamu; and Oku, Teruo, 4,267,340, Cl. 548-187.000.

Okuda, Nobuo: *See*—
Hidai, Yutaka; and Okuda, Nobuo, 4,267,456, Cl. 250-492.00A.

Okumichi, Toshiharu; and Kawatani, Kimio, to Arakawa Kagaku Kogyo Kabushiki Kaisha. Process for preparing aqueous dispersion of rosin-base materials. 4,267,099, Cl. 260-101.000.

Old Dominion University Research Foundation: *See*—
Chaikin, George M.; and Weiman, Carl F. R., 4,267,573, Cl. 364-515.000.

Ole Joergensen: *See*—
Joergensen, Ole, 4,266,361, Cl. 43-42.460.

Oleck, Stephen M.: *See*—
Heck, Roland H.; Oleck, Stephen M.; Shih, Stuart S.; and Wilson, Robert C., 4,267,033, Cl. 208-216.0PP.

Olin Corporation: *See*—
Patel, Harshad M., 4,267,026, Cl. 204-98.000.

Oliver, Robert D. Universal coupler. 4,266,813, Cl. 285-12.000.

O'Loughlin, James P., to United States of America, Air Force. Parallel multi-electrode spark gap switch. 4,267,484, Cl. 313-325.000.

Olschefski, Robert D., to N.B.E. Corporation. Method and apparatus for gaging. 4,266,346, Cl. 33-174.00Q.

Olsen, Eric G.; and Jackson, Winston J., Jr., to Eastman Kodak Company. Linear hydroquinone phenoxy polymers and process. 4,267,301, Cl. 528-93.000.

Olsen, Jan-Erik, to Tetra Pak International AB. Method for the sealing of a cover strip onto packing containers. 4,266,993, Cl. 156-69.000.

Olympus Optical Co., Ltd.: *See*—
Komiya, Osamu, 4,266,547, Cl. 128-303.100.
Ogawa, Mototugu, 4,266,534, Cl. 128-6.000.

Omnium Chimique Societe Anonyme: *See*—
Kuehne, Martin E., 4,267,330, Cl. 546-51.000.

Omron Tateisi Electronics Co.: *See*—
Iketani, Hiroshi, 4,267,540, Cl. 335-128.000.

O'Neill, Edward G.: *See*—
Dutcher, Robert G.; and O'Neill, Edward G., 4,266,552, Cl. 128-419.00P.

Oostvogels, Johannes M., to Maatschappij van Berkel's Patent N.V. Drive mechanism for the reciprocating meat supporting carriage of a meat slicing machine. 4,266,456, Cl. 83-731.000.

Optische Werke G. Rodenstock: *See*—
Schlegel, Franz, 4,266,848, Cl. 350-8.000.

Orals, David L.; and Laffoon, James D., to United States Gypsum Company. Fire resistant ceiling furring system. 4,266,384, Cl. 52-410.000.

Orion Research Incorporated: *See*—
Frant, Martin S.; and Soderberg, Jon, 4,267,023, Cl. 204-1.00T.

Ormid Company: *See*—
Laux, Joseph J., 4,266,350, Cl. 36-44.000.

Ortwein, Hermann; and Braitsch, Hans, to Clouth Gummiwerke Aktiengesellschaft. Track mounting assembly and sound-damping system therefore. 4,266,719, Cl. 238-283.000.

Ory, Jean-Marie: *See*—
Janin, Gerard; and Ory, Jean-Marie, 4,266,874, Cl. 356-335.000.

Osaka Cement Co., Ltd.: *See*—
Chudo, Akira; Sugi, Tomomitsu; and Kataoka, Kouji, 4,266,980, Cl. 106-97.000.

Osakabe, Yoshio; and Yasuda, Hiroshi, to Sony Corporation. Memory control circuit. 4,267,603, Cl. 455-186.000.

Oshima, Akinobu: *See*—
Miura, Konoe; Eguchi, Chihiro; Takahashi, Yoshihiro; Oshima, Akinobu; Torige, Kazuo; and Bunya, Shinichi, 4,267,260, Cl. 430-302.000.

Osuna-Diaz, Jesus M., to Incoe Corporation. Nozzle for injection molding machines. 4,266,723, Cl. 239-132.000.

Otani, Mitsuoki: *See*—
Murakami, Katsuo; Anzai, Yoshinori; Otani, Mitsuoki; and Ito, Hiroshi, 4,267,485, Cl. 313-486.000.

Otis Engineering Corporation: *See*—
Fredd, John V., 4,266,614, Cl. 166-332.000.

Ott, Karl-Heinz: *See*—
Lindner, Christian; Arnold, Bernhard; Kuhlmann, Dieter; Kowitz, Friedrich; and Ott, Karl-Heinz, 4,267,278, Cl. 525-2.000.

Outokumpu Oy: *See*—
Setala, Pekka T.; Makipirtti, Simo A. I.; and Heino, Heimo J., 4,266,512, Cl. 122-5.50R.

Overy, Colin, to Black & Decker Inc. Portable electrically energized surface finishing tool. 4,266,376, Cl. 51-170.00R.

Ovshinsky, Stanford R.: *See*—
Hallman, Robert W.; Ovshinsky, Stanford R.; and de Neufville, John P., 4,267,261, Cl. 430-322.000.

Owens-Corning Fiberglas Corporation: *See*—
Scott, James W.; and Rising, Robert, 4,266,960, Cl. 65-4.00R.
Waugh, John A., 4,266,323, Cl. 19-0.560.

Owens, James J., to Eastern Container Corporation. Corrugating machine. 4,267,008, Cl. 156-462.000.

Oxon Italia S.p.A.: *See*—
Motta, Raimondo, 4,267,323, Cl. 544-236.000.

Ozaki, Shoichiro; Ike, Yoshimasa; Ishikawa, Katsutoshi; and Mori, Haruki, to Mitsui Toatsu Chemicals, Incorporated. Uracil derivatives. 4,267,326, Cl. 544-313.000.

Ozawa, Masahiro; Komatsu, Tadaaki; and Matsuoka, Kimiaki, to Central Glass Company, Limited. Novel derivatives of hexafluoropropene dimer and process for preparing same. 4,267,360, Cl. 560-111.000.

Pacific Kenyon Corporation: *See*—
Sawhill, James W., 4,267,197, Cl. 426-69.000.

Paek, Yong K. Telescoping sliced bread dispenser. 4,266,668, Cl. 206-557.000.

Palmer, Arthur J. Noise-memory regulated squelch compensator. 4,267,598, Cl. 455-78.000.

Panzik, Donald; and Smith, David. Nasal oxygen therapy mask. 4,266,540, Cl. 128-207.130.

Paola, Carl R.: *See*—
Johnson, Bertrand H.; and Paola, Carl R., 4,267,559, Cl. 357-81.000.

Papadatos, Dionysios D.: *See*—
Riester, William C.; and Papadatos, Dionysios D., 4,266,883, Cl. 403-134.000.

Parfitt, Norman L. C., to Coal Industry (Patents) Limited. Non-return device. 4,266,637, Cl. 188-196.00P.

Pargamin, Laurent, to Ceraver. Electric line insulator made of organic material and having an inner semi-conductive part extending between end anchor fittings. 4,267,403, Cl. 174-140.00S.

Park, Dong-Sil;; Breiter, Manfred W.; and King, Randall N., to Electric Power Research Institute, Inc. Method of making a sulfur electrode container. 4,266,712, Cl. 228-175.000.

Park, Joon B., to Clemson University. Method of orthopedic implantation and implant product. 4,266,303, Cl. 3-1.910.

Park, Robert H.; and Waage, Clark A. Bipolar storage battery of extended surface electrode type. 4,267,243, Cl. 429-136.000.

Parker, Frederick A.; and Grady, Mark P., to Rexnord Inc. Carbon dioxide scrubber and gas regenerator unit for a closed circuit rebreathing apparatus. 4,266,539, Cl. 128-204.260.

Parker-Hannifin Corporation: *See*—
Krause, Walter O., 4,266,408, Cl. 62-474.000.
Tilling, Basil B., 4,266,574, Cl. 137-630.190.

Parlman, Robert M., to Phillips Petroleum Company. Phenol alkylation. 4,267,394, Cl. 568-792.000.

Parramore, Emmett W. Double crop planter, sprayer and topper. 4,266,489, Cl. 111-1.000.

Partridge, Aileen A. Attachable and detachable pocket for a garment. 4,266,300, Cl. 2-247.000.

Partridge, Charles C.: *See*—
Kacal, Gary W.; and Partridge, Charles C., 4,266,566, Cl. 137-316.000.

Parziale, Victor E.; Dines, Martin B.; and DiGiacomo, Peter M., to Occidental Research Corporation. Layered zirconium bis(benzenephosphonate) inorganic polymers. 4,267,308, Cl. 528-395.000.

Pastor, Ricardo C.; Chew, Remedios K.; and Gorre, Luisa E., to Hughes Aircraft Company. Process for low-temperature surface layer oxidation of a semiconductor substrate. 4,267,205, Cl. 427-93.000.

Pastorino, Ronald L.; and Lewis, Roger N., to Argus Chemical Corporation. Cyclic perketals and their use for cross-linking high density polyethylene. 4,267,109, Cl. 260-338.000.

Patel, Harshad M., to Olin Corporation. Spent brine concentration using microwave energy. 4,267,026, Cl. 204-98.000.

Patel, Ravin J.; and Petro, John, to Bliss & Laughlin Industries Incorporated. Coupling hinge for two conveyors. 4,266,650, Cl. 193-35.0TE.

Patrick, James F.: *See*—
Forster, Ian C.; Patrick, James F.; Tong, Yit C.; Black, Raymond C.; and Clark, Graeme M., 4,267,410, Cl. 179-107.0BC.

Patterson, Michael J. Hunting arrow. 4,266,782, Cl. 273-423.000.

Paul Wurth, S.A.: *See*—
Mailliet, Pierre, 4,266,907, Cl. 414-687.000.

Paulos, Antonio C.: *See*—
Mahrus, Duraid; and Paulos, Antonio C., 4,267,241, Cl. 428-645.000.

Paulus, Irmo, to Siemens Aktiengesellschaft. Contact arrangement for vacuum switch. 4,267,416, Cl. 200-144.00B.

Paxton, Alan H.; and Salvi, Theodore C. Unstable optical resonator with self-imaging aperture. 4,267,524, Cl. 331-94.50C.

Payne, Leslie E., to R. J. Reynolds Tobacco Company. Apparatus for phasing and transferring rod-shaped articles. 4,266,655, Cl. 198-461.000.

Pchelkin, Nicholas R.: *See*—
McDermott, William E.; Benard, David J.; Pchelkin, Nicholas R.; and Bousek, Ronald R., 4,267,526, Cl. 331-94.50G.

Pease, James F. Fluid control valve and support assembly. 4,266,567, Cl. 137-343.000.

Pelchat, Paul F.; and Arlauskas, Alfonsas, to General Motors Corporation. Hinge and hold-open assembly. 4,266,321, Cl. 16-145.000.

Pemberton, W. Bruce. Grapple apparatus. 4,266,819, Cl. 294-88.000.
Penders, Josef M.: *See—*
Meyer, Peter J. N.; and Penders, Josef M., 4,267,362, Cl. 560-174.000.
Pennwalt Corporation: *See—*
Massarsky, Philip M., 4,267,029, Cl. 204-196.000.
Pennypacker, Ronald S.: *See—*
Edwards, Thomas W.; and Pennypacker, Ronald S., 4,266,334, Cl. 29-583.000.
Penzel, Erich: *See—*
Geelhaar, Hans J.; Penzel, Erich; and Ley, Gregor, 4,267,091, Cl. 260-29.6TA.
Perdent, GmbH.: *See—*
Michl, Rudy; and Wollwage, Peter, 4,267,097, Cl. 260-42.150.
Perets, Nikolai Y.: *See—*
Velikoselsky, Nikolai D.; Smirnov, Anatoly I.; Perets, Nikolai Y.; Vinogradov, Sergei S.; Podbeltsev, Viktor I.; and Lakhno, Pavel E., 4,266,680, Cl. 212-193.000.
Perez, David J.; and Schwartz, Kenneth P., to United States of America, Air Force. Ram wing aircraft launch platform system. 4,266,742, Cl. 244-63.000.
Perez, Jean; and Carnus, Jean-Claude, to Automobiles Peugeot; and Societe Anonyme Automobiles Citroen. Device for regulating the amount of exhaust gases recycled to a diesel engine. 4,266,524, Cl. 123-568.000.
Periot, Jean-Marie, to La Telemecanique Electrique. L.C. oscillator proximity detector. 4,267,522, Cl. 331-65.000.
Perkey, Conrad G.; and Bell, John L., to Ford Motor Company. Use of mold venting practices in green sand molding for odor reduction. 4,266,595, Cl. 164-41.000.
Perner, Johannes: *See—*
Diessel, Paul; Perner, Johannes; Leutner, Bernd; and Schlimper, Hans-Ulrich, 4,267,068, Cl. 252-179.000.
Pernot, Jacques, to Micro-Mega, S.A. Dental handpiece with fluid delivery control. 4,266,934, Cl. 433-85.000.
Perrault, Frederick; and Perrault, Raymond E. Arrangement for forming metal parts. 4,266,310, Cl. 10-86.00R.
Perrault, Raymond E.: *See—*
Perrault, Frederick; and Perrault, Raymond E., 4,266,310, Cl. 10-86.00R.
Perry, James E. Apparatus utilizing portions of a conventional telephone installation for selectively controlling electrically operated, temperature regulating equipment. 4,267,406, Cl. 179-2.00A.
Petersen, Larry D.; and Squires, Stanley C., to Ford Motor Company. Composite brake drum. 4,266,638, Cl. 188-218.00R.
Peterson, Jeffory A.: *See—*
Erdman, Arthur G.; and Peterson, Jeffory A., 4,266,371, Cl. 49-252.000.
Petit & Cie: *See—*
Sergent, Andre, 4,266,582, Cl. 141-198.000.
Petree, Harris E.; Pociask, Joseph R.; and Gupton, John T., to Ciba-Geigy Corporation. Method for direct preparation for 1,2,4-triazole from hydrazine and formamide. 4,267,347, Cl. 548-262.000.
Petrizio, Cesare J.; and Isham, Robert H., to RCA Corporation. Relaxation oscillator. 4,267,527, Cl. 331-111.000.
Petro, John: *See—*
Patel, Ravin J.; and Petro, John, 4,266,650, Cl. 193-35.0TE.
Petrocarbon Development Limited: *See—*
Isalski, Wieslaw H., 4,266,957, Cl. 62-18.000.
Pett, Robert A.; Qaderi, S. Burhan A.; and Tabar, Ronald J., to Ford Motor Company. Sacraficial binders for molding particulate solids. 4,267,086, Cl. 260-28.50R.
Petters, Claus: *See—*
Pogoda, Dieter; Petters, Claus; and Rost, Arno, 4,267,147, Cl. 264-571.000.
Petukhov, Vadim D.: *See—*
Gaun, Viktor A.; Belousov, Anatoly V.; Petukhov, Vadim D.; Suxov, Gennady I.; Belyaev, Nikolai A.; Alyabiev, Vitaly K.; and Rassomakhin, Klimenty E., 4,266,465, Cl. 91-234.000.
Pfeiffer, N. Leonard. Portable fuel and oil dispenser. 4,266,693, Cl. 222-135.000.
Pfizer Inc.: *See—*
Schnur, Rodney C., 4,267,342, Cl. 548-216.000.
Welch, Willard M., Jr., 4,267,331, Cl. 546-85.000.
Phelan, Michael B.: *See—*
Ruth, Harvey L.; Schneider, Michael H.; and Phelan, Michael B., 4,267,129, Cl. 261-72.00R.
Philip Morris Incorporated: *See—*
Merritt, Henry B.; and Kite, George F., 4,266,562, Cl. 131-293.000.
Philipp, Hugo: *See—*
Meier, Friedrich; and Philipp, Hugo, 4,266,896, Cl. 409-299.000.
Phillips, John C.; and Nobel, Michael D. Underwater firearm. 4,266,358, Cl. 42-39.500.
Phillips, Paul J.: *See—*
Johnson, Malcolm; Mills, Stuart D.; and Phillips, Paul J., 4,267,183, Cl. 424-263.000.
Phillips Petroleum Company: *See—*
Asher, Lance A., 4,266,689, Cl. 220-307.000.
Carter, Cecil O., 4,267,034, Cl. 208-323.000.
Eddy, William R., 4,267,009, Cl. 156-538.000.
Fahey, Darryl R., 4,267,293, Cl. 526-116.000.
Kitchen, Alonzo G., 4,267,284, Cl. 525-99.000.
Kraus, Gerard; and Hunt, Harold R., 4,267,160, Cl. 423-456.000.
Louthan, Rector P.; and Doss, Richard C., 4,267,307, Cl. 528-293.000.
Meister, John J., 4,266,610, Cl. 166-273.000.
Parlman, Robert M., 4,267,394, Cl. 568-792.000.
Vives, Van C.; and Mahan, John E., 4,267,351, Cl. 549-19.000.
Pic Disc, Inc.: *See—*
Dague, Harold F., 4,267,001, Cl. 156-245.000.
Pickard Equipment, Inc.: *See—*
Pickard, Kenneth L., 4,266,910, Cl. 414-735.000.
Pickard, Kenneth L., to Pickard Equipment, Inc. Pipe positioner boom and head assembly for pipe laying frame. 4,266,910, Cl. 414-735.000.
Piekarski, Michael: *See—*
Thomas, Robert J.; and Piekarski, Michael, 4,267,439, Cl. 235-454.000.
Pierburg GmbH & Co. Kg: *See—*
Muller, Hans-Jurgen, 4,266,520, Cl. 123-454.000.
Pierce, John M.; Lehrer, William I.; and Radigan, Kenneth J., to Fairchild Camera & Instrument Corp. Process for patterning metal connections on a semiconductor structure by using a tungsten-titanium etch resistant layer. 4,267,012, Cl. 156-643.000.
Pieroni, Joseph K.: *See—*
Martin, Frank S.; Melvin, Terence; and Pieroni, Joseph K., 4,266,772, Cl. 273-218.000.
Pilla, Arthur A.: *See—*
Ryaby, John P.; and Pilla, Arthur A., 4,266,532, Cl. 128-1.500.
Ryaby, John P.; and Pilla, Arthur A., 4,266,533, Cl. 128-1.500.
Pitcher, Frederick L. Energy efficient process and apparatus for desalinizing water. 4,267,022, Cl. 203-11.000.
Pitel, Irving: *See—*
Jezorek, Leigh; Pitel, Irving; and Silverman, Richard, 4,267,214, Cl. 427-341.000.
Pitney Bowes Inc.: *See—*
Lorenzo, John L., 4,266,480, Cl. 101-351.000.
Pitt, Paul E.: *See—*
Dechant, Thomas E.; Glaser, Edward L.; Pitt, Paul E.; and Way, Frederick, 4,267,568, Cl. 364-200.000.
Placo Products Company: *See—*
McQuary, Kenneth L., 4,266,780, Cl. 273-387.000.
Plantex Ltd.: *See—*
Tedeschi, Enzo, 4,267,339, Cl. 548-154.000.
Platmanufaktur Aktiebolaget: *See—*
Strom, Holger, 4,266,651, Cl. 198-345.000.
Playfoot, Kerwin C.; Bauer, Richard F.; and Goldstein, Norman P., to Westinghouse Electric Corp. Self-powered radiation detector with conductive emitter support. 4,267,454, Cl. 250-370.000.
Plevak, Lubomir; and Dodt, Jurgen, to Gewerkschaft Eisenhutte Westfalia. Support assemblies for mine workings. 4,266,891, Cl. 405-291.000.
Pociask, Joseph R.: *See—*
Petree, Harris E.; Pociask, Joseph R.; and Gupton, John T., 4,267,347, Cl. 548-262.000.
Podbeltsev, Viktor I.: *See—*
Velikoselsky, Nikolai D.; Smirnov, Anatoly I.; Perets, Nikolai Y.; Vinogradov, Sergei S.; Podbeltsev, Viktor I.; and Lakhno, Pavel E., 4,266,680, Cl. 212-193.000.
Poetter, Gerswid: *See—*
Dhein, Rolf; Poetter, Gerswid; and Rudolph, Hans, 4,267,082, Cl. 260-23.0AR.
Pogoda, Dieter; Petters, Claus; and Rost, Arno, to Messerschmit-Boelkow-Blohm GmbH. Method for producing fiber reinforced structure components. 4,267,147, Cl. 264-571.000.
Pohl, Andreas: *See—*
Keller, Guenter; Pohl, Andreas; and Hintz, Gerhard, 4,266,467, Cl. 91-437.000.
Pohle, Raimund: *See—*
Henne, Werner; Dunweg, Gustav; Schmitz, Werner; Pohle, Raimund; and Lawitzki, Friedrich, 4,267,047, Cl. 210-490.000.
Poignant, Jean-Claude: *See—*
Regnier, Gilbert; Laubie, Michel; and Poignant, Jean-Claude, 4,267,178, Cl. 424-250.000.
Polaroid Corporation: *See—*
Bloom, Stanley M., deceased; and Sachdev, Krishna G., 4,267,254, Cl. 430-245.000.
Bloom, Stanley M., deceased; and Sachdev, Krishna G., 4,267,256, Cl. 430-251.000.
Idelson, Elbert M., 4,267,252, Cl. 430-225.000.
Idelson, Elbert M., 4,267,253, Cl. 430-225.000.
Locatell, Louis, Jr.; Zepp, Charles M.; and Cieciuch, Ronald F., 4,267,251, Cl. 430-224.000.
Schreiber, Karl J., 4,267,255, Cl. 430-245.000.
Sparks, John W.; and Bader, Henry, 4,267,324, Cl. 544-262.000.
Poliniak, Eugene S.; and Desai, Nitin V., to RCA Corporation. Method for forming a shallow surface relief pattern in a poly(olefin sulfone) layer. 4,267,257, Cl. 430-270.000.
Polka, Udo: *See—*
Stelter, Heino; Preiss, Manfred; and Polka, Udo, 4,267,606, Cl. 455-603.000.
Polyair Produkt Design Gesellschaft m.b.h.: *See—*
Weigl, Erwin, 4,266,805, Cl. 280-615.000.
Polycell Products Limited: *See—*
Glaser, Denis V.; and Heeley, Norman, 4,267,092, Cl. 260-29.6RB.
Pont-A-Mousson S.A.: *See—*
Lippera, Noel, 4,266,997, Cl. 156-158.000.
Popov, Alexandr D.; Solomin, Vladimir A.; and Zvezdunov, Dmitry A. Linear induction motor. 4,267,471, Cl. 310-13.000.
Positioning Devices, Incorporated: *See—*
Souder, James J., Jr.; Scarborough, Edward D., Jr.; and Fox, Merlin D., 4,266,747, Cl. 248-280.100.

Powell, Thomas E.; and Ito, Shiro T., to White Motor Corporation of Canada, Limited. Rotor for an axial flow combine. 4,266,560, Cl. 130-27.00T.
Power, Joseph S.; and Ruszala, Frederick B., to Valeron Corporation, The. Interconnection system for a biological waveform simulator device. 4,267,576, Cl. 364-578.000.
Powers, Robert H.: *See—*
Dodge, Dennis; Matwey, Paul; Madigan, Thomas M.; and Powers, Robert H., 4,266,866, Cl. 354-84.000.
PPG Industries, Inc.: *See—*
Sickles, James E., 4,266,721, Cl. 239-3.000.
Steiger, Roger A., 4,266,977, Cl. 106-43.000.
Preiss, Manfred: *See—*
Stelter, Heino; Preiss, Manfred; and Polka, Udo, 4,267,606, Cl. 455-603.000.
Pretzer, Wayne R.: *See—*
Austin, Richard G.; Pretzer, Wayne R.; and Kobylinski, Thaddeus P., 4,267,379, Cl. 568-385.000.
Austin, Richard G.; Pretzer, Wayne R.; and Kobylinski, Thaddeus P., 4,267,380, Cl. 568-385.000.
Prichard, Richard J., to Spencer Wright Industries, Inc. Tufting machines and knife blocks therefor. 4,266,491, Cl. 112-79.00R.
Prochazka, Svante, to General Electric Company. Synthesis of mixed oxide composition. 4,266,978, Cl. 106-39.500.
Procter & Gamble Company, The: *See—*
Klien, Caren A.; and Gieseker, Donald R., 4,267,200, Cl. 426-595.000.
Productos Esteve Internacional S.A.: *See—*
Esteve Subirana, Antonio, 4,267,334, Cl. 546-206.000.
Produits Chimiques Ugine Kuhlmann: *See—*
Duperray, Gilbert; Monnet, Andre A.; and Tournut, Claude, 4,267,237, Cl. 428-422.000.
Propylox: *See—*
Hardy, Nicolas; Lerot, Luc; and Walraevens, Rene, 4,267,124, Cl. 260-502.00R.
Proteinkemisk Institut. tilknyttet Akademiet for de tekniske Videnskaber: *See—*
Halstrom, John B.; and Kovacs, Karoly G., 4,267,344, Cl. 548-227.000.
Proulx, Paul A.: *See—*
Brown, Robert; and Proulx, Paul A., 4,267,446, Cl. 250-255.000.
Prudhon, Francois; and Scicluna, Augustin, to Rhone-Poulenc Industries. Method for intimate contacting of plural phases and phase contactor apparatus therefor. 4,267,131, Cl. 261-153.000.
Pruett, Robert L. Recirculating submersible turbine. 4,266,402, Cl. 60-496.000.
Pryor, Larry A. Bicycle hitch device. 4,266,793, Cl. 280-204.000.
Puarica, Douglas A., to Maxson Corporation, The. Rail car door linkage. 4,266,486, Cl. 105-276.000.
Pullman Incorporated: *See—*
Deller, Robert J., 4,266,381, Cl. 52-177.000.
Marulic, Walter J.; and Gutrigde, Jack E., 4,266,487, Cl. 105-397.000.
Whaley, Robert L.; and Day, James L., 4,266,820, Cl. 296-35.300.
Pulp and Paper Research Institute of Canada: *See—*
Manley, Rockliffe S., 4,266,918, Cl. 425-66.000.
Puppolo, Henry F.; and Markarian, Mark, to Sprague Electric Company. Copper encased flat electrolytic capacitor manufacture and capacitor. 4,267,565, Cl. 361-433.000.
Puppolo, Henry F.: *See—*
Markarian, Mark; and Puppolo, Henry F., 4,266,332, Cl. 29-570.000.
Purdue Research Corporation: *See—*
Tsao, George T.; and Chou, Terry Y., 4,266,981, Cl. 127-37.000.
Qaderi, S. Burhan A.: *See—*
Pett, Robert A.; Qaderi, S. Burhan A.; and Tabar, Ronald J., 4,267,086, Cl. 260-28.50R.
Quantor Corporation: *See—*
Mohr, Siegfried H., 4,266,855, Cl. 350-254.000.
Quarz-Zeit AG: *See—*
Sudler, Roland; and Schwab, Jean-Francois, 4,267,472, Cl. 310-49.00R.
R. J. Reynolds Tobacco Company: *See—*
Payne, Leslie E., 4,266,655, Cl. 198-461.000.
Raab, Owen E.: *See—*
Kirk, Chester E.; and Raab, Owen E., 4,266,583, Cl. 142-56.000.
Raasch, Hans, to W. Schlafhorst & Co. Winding device. 4,266,734, Cl. 242-18.0DD.
Radigan, Kenneth J.: *See—*
Pierce, John M.; Lehrer, William I.; and Radigan, Kenneth J., 4,267,012, Cl. 156-643.000.
Rail, Robert D.; and Haynes, Harvey H., to United States of America, Navy. System for placing freshly mixed concrete on the seafloor. 4,266,889, Cl. 405-223.000.
Raimondi, Peter K., to United States of America, Army. Method of autonomous target acquisition. 4,267,562, Cl. 358-109.000.
Raines, Joyce Anita: *See—*
Raines, Vernon R., 4,267,411, Cl. 179-184.000.
Raines, Vernon R., to Raines, Joyce Anita, a part interest. Public telephone security bracket. 4,267,411, Cl. 179-184.000.
Ramcor, Inc.: *See—*
Georgallis, Peter C., 4,267,585, Cl. 367-13.000.
Rammler, Roland: *See—*
Simo, Thomas; and Rammler, Roland, 4,267,061, Cl. 210-772.000.
Ramos, Gary A.; and Dell'Ara, Michael E., to Gerald T. Colwell, a part interest. Strap winding device. 4,266,740, Cl. 242-86.520.
Ramspeck, Klaus: *See—*
Milutzki, Udo; Gaus, Harry; Schotte, Dietwald; and Ramspeck, Klaus, 4,266,783, Cl. 369-41.000.
Rannanmaki, Tapio M., to Vaino Tapio Saalasti. Convertible rail-highway car moving vehicle. 4,266,483, Cl. 105-26.00R.
Ranz, Erwin: *See—*
Lohmann, Joachim W.; Lapp, Otto; and Ranz, Erwin, 4,267,264, Cl. 430-505.000.
Rao, Krishna K.: *See—*
Dauerman, Leonard; Rao, Krishna K.; Dabbs, Joseph C.; and Delaney, Brian, 4,267,156, Cl. 423-242.000.
Rapakoulias, Demetre: *See—*
Amouroux, Jacques; Rapakoulias, Demetre; and Cavadias, Simeon, 4,267,027, Cl. 204-179.000.
Rapco Foam, Inc.: *See—*
Korf, Heinz L., 4,267,277, Cl. 521-103.000.
Rassomakhin, Klimenty E.: *See—*
Gaun, Viktor A.; Belousov, Anatoly V.; Petukhov, Vadim D.; Suxov, Gennady I.; Belyaev, Nikolai A.; Alyabiev, Vitaly K.; and Rassomakhin, Klimenty E., 4,266,465, Cl. 91-234.000.
Rausing, Anders R., to Tetra Pak Developpement SA. Opening arrangement for packing containers of thin plastic film together with a packing container provided with the opening arrangement. 4,266,698, Cl. 222-528.000.
RayGo, Inc.: *See—*
Fadness, Quinten K., 4,266,904, Cl. 414-460.000.
Raytheon Company: *See—*
Lowenschuss, Oscar, 4,267,596, Cl. 455-18.000.
RCA Corporation: *See—*
Burrus, Thomas W., 4,266,785, Cl. 369-216.000.
Edwards, Thomas W.; and Pennypacker, Ronald S., 4,266,334, Cl. 29-583.000.
Petrizio, Cesare J.; and Isham, Robert H., 4,267,527, Cl. 331-111.000.
Poliniak, Eugene S.; and Desai, Nitin V., 4,267,257, Cl. 430-270.000.
Reichert, Walter F., 4,266,333, Cl. 29-571.000.
Schade, Otto H., Jr., 4,267,519, Cl. 330-255.000.
Thornberry, Gerald E., 4,267,528, Cl. 333-12.000.
Torrington, Leslie A., 4,266,784, Cl. 369-77.000.
Unetich, Robert M.; and Shibler, William, 4,267,487, Cl. 315-107.000.
Reale, Lucio. Fruit preparation. 4,266,472, Cl. 99-483.000.
Red-D-Arc International Inc.: *See—*
Holmes, Gordon W.; and Marykuca, William, 4,266,690, Cl. 221-254.000.
Redondo-Abad, Angel L.; Diaz-Nogueira, Eduardo; Gerez-Pascual, Martin; and Regife-Vega, Jose M. Process for non-ferrous metals production from complex sulphide ores containing copper, lead, zinc, silver and/or gold. 4,266,972, Cl. 75-101.00R.
Reeberg, Christiaan. Hold steady straps. 4,266,867, Cl. 354-293.000.
Reese, Robert O.; Wieber, Karl R.; and Hartman, James T., to Envirotech Corporation. Precipitator voltage control system. 4,267,502, Cl. 323-237.000.
Refac Electronics: *See—*
Chen, Schoen-nan; Russak, Michael A.; Witzke, Horst; Reichman, Joseph; and Deb, Satyendra K., 4,266,338, Cl. 29-623.200.
Regal Tool & Rubber Co., Inc.: *See—*
Swain, Jack W.; Thomerson, Clarence T.; and Waldrop, Tom C., 4,266,578, Cl. 138-110.000.
Regan, John F.; and Mehta, Bakulesh A., to Wescom Switching, Inc. Method and means for digital conferencing. 4,267,593, Cl. 370-62.000.
Regan, Thomas D. Tamper-proof odometer. 4,267,438, Cl. 235-96.000.
Regenerative Environmental Equipment Co., Inc.: *See—*
Benedick, Edward H., 4,267,152, Cl. 422-111.000.
Regife-Vega, Jose M.: *See—*
Redondo-Abad, Angel L.; Diaz-Nogueira, Eduardo; Gerez-Pascual, Martin; and Regife-Vega, Jose M., 4,266,972, Cl. 75-101.00R.
Regnault, Alain: *See—*
Sachetto, Jean-Pierre; Regnault, Alain; Cuccolo, Sergio; Tournier, Herve; and Armanet, Jean-Michel, 4,267,314, Cl. 536-53.000.
Regnier, Gilbert; Laubie, Michel; and Poignant, Jean-Claude, to Science Union et Cie, Societe Francaise de Recherche Med. Disubstituted piperazines. 4,267,178, Cl. 424-250.000.
Reichert, Walter F., to RCA Corporation. Method of making a Schottky barrier field effect transistor. 4,266,333, Cl. 29-571.000.
Reichman, Joseph: *See—*
Chen, Schoen-nan; Russak, Michael A.; Witzke, Horst; Reichman, Joseph; and Deb, Satyendra K., 4,266,338, Cl. 29-623.200.
Reid, Jeremy T., to Continental Group, Inc., The. Easy access tab for vacuum packed products. 4,266,688, Cl. 220-273.000.
Reid, Robert M.: *See—*
Haines, Rolf; and Reid, Robert M., 4,266,490, Cl. 111-3.000.
Reid, Rod B. Trough roller assembly. 4,266,662, Cl. 198-829.000.
Reighter, David H., to Gould Inc. Polymer concrete body with vibration molded threads, method of making same, and electrical insulator provided with the same. 4,267,402, Cl. 174-137.00R.
Reil, Wilhelm: *See—*
Linde, Bjorn H.; and Reil, Wilhelm, 4,266,389, Cl. 53-396.000.
Reilly Tar & Chemical Corporation: *See—*
McGill, Charles K., 4,267,335, Cl. 546-257.000.
Reinforced Earth Company, The: *See—*
Hilfiker, William K., 4,266,890, Cl. 405-286.000.

Reis, Robert D., to United Electric Controls Company. Temperature compensated pressure control. 4,267,413, Cl. 200-81.400.

Rekers, Louis J.: *See—*
Heimberg, Manfred; and Rekers, Louis J., 4,267,090, Cl. 260-29.60R.

Rembaum, Alan, to California Institute of Technology. Polyglutaraldehyde synthesis and protein bonding substrates. 4,267,234, Cl. 428-403.000.

Rembaum, Alan; and Margel, Shlomo, to California Institute of Technology. Polyglutaraldehyde microspheres. 4,267,235, Cl. 428-407.000.

Rengo Co., Ltd.: *See—*
Tokuno, Masateru, 4,266,998, Cl. 156-159.000.

Renjilian, Armen: *See—*
Schiher, Stanley C.; and Renjilian, Armen, 4,267,227, Cl. 428-234.000.

Reppert, Rudi, to WGW Westdeutsche Getriebe- und Kupplungswerke GmbH. Torque division gearing. 4,266,436, Cl. 74-395.000.

Research, Development & Marketing, Inc.: *See—*
Nelson, John R., 4,266,665, Cl. 206-445.000.

Resnick, Paul R.: *See—*
Grot, Walther G.; Molnar, Charles J.; and Resnick, Paul R., 4,267,364, Cl. 560-183.000.

Retka, Thomas J.; and Schoen, Donald W., to United States of America, Interior. Auger construction providing reduced noise. 4,266,830, Cl. 299-87.000.

Retobobina Handelsanstalt: *See—*
Faulhaber, Fritz, 4,267,477, Cl. 310-266.000.

Reusser, Fritz; and Slechta, Libor, to Upjohn Company, The. Antibiotic U-58,431. 4,267,112, Cl. 260-345.200.

Revell, Alan, to American Air Filter Company, Inc. Filter clamping device. 4,266,956, Cl. 55-478.000.

Rexnord Inc.: *See—*
Parker, Frederick A.; and Grady, Mark P., 4,266,539, Cl. 128-204.260.

Reynolds, George H.: *See—*
Kaae, James L.; Reynolds, George H.; Sterling, Stewart A.; and Yang, Ling, 4,267,019, Cl. 176-82.000.

Reynolds Metals Company: *See—*
Lee, Harry W., Jr., 4,266,685, Cl. 220-74.000.

Rheinische Braunkohlenwerke A.G.: *See—*
Daldrup, Heinz G.; Nothhelfer, Gunther; Franke, Friedrich H.; and Limpach, Raymond, 4,266,968, Cl. 75-42.000.

Rheintechnik Weiland & Kaspar KG: *See—*
Uhlmann, Georg, 4,267,051, Cl. 210-619.000.

Rheon Automatic Machinery Co., Ltd.: *See—*
Hayashi, Torahiko; Kageyama, Minoru; and Morikawa, Michio, 4,266,920, Cl. 425-133.100.

Rhodes, Charles D. Safety hitch catch. 4,266,797, Cl. 280-423.00R.

Rhone-Poulenc Industries: *See—*
Prudhon, Francois; and Scicluna, Augustin, 4,267,131, Cl. 261-153.000.
Roullet, Gilbert, 4,267,143, Cl. 264-516.000.
Torloting, Jean-Claude, 4,267,083, Cl. 260-23.0XA.

Richard Equipment Company, Inc.: *See—*
Bell, Richard P.; Rill, Karl F.; and Butler, John C., 4,266,674, Cl. 209-536.000.

Richard, J. Richard, to Manufacture de Machines du Haut-Rhin S.A. Endless chain for installations treating continuously moving articles. 4,266,656, Cl. 198-655.000.

Richardson, Mason E., to Estan Manufacturing Company. Dipstick alignment guide. 4,266,344, Cl. 33-126.70R.

Richter Gedeon Vegyeszeti Gyar Rt.: *See—*
Dobo, Janos; Takacs, Erzsebet; Hortobagyi, Gyozo; Skvorecz nee Hajnoczy, Marianne; Kolbe, Ilona; and Hoffmann nee Vas, Katalin, 4,267,138, Cl. 264-117.000.

Rick, Randy L.; Mazzotta, Paul F.; and Daiello, Cosimo D., to Shearpower International Corporation. Electric hair curling apparatus having a motor-driven rotatable hair wrapping member. 4,267,431, Cl. 219-225.000.

Ricoh Company, Ltd.: *See—*
Eda, Tadahiro; Tatsumi, Susumu; and Imai, Chikara, 4,266,870, Cl. 355-14.00D.
Nakahara, Tosio; Yano, Hidetoshi; and Kasahara, Nobuo, 4,267,201, Cl. 427-27.000.

Riester, William C.; and Papadatos, Dionysios D., to Trico Products Corporation. Windshield wiper linkage. 4,266,883, Cl. 403-134.000.

Riggs, Aubrey F., to Imperial Chemical Industries Limited. Process for coating a web using reverse applicator roll. 4,267,215, Cl. 427-372.200.

Riggs, Howard: *See—*
Riggs, Robert L.; and Riggs, Howard, 4,266,796, Cl. 280-414.00R.

Riggs, Robert L.; and Riggs, Howard. Trailer tongue wheel. 4,266,796, Cl. 280-414.00R.

Rill, Karl F.: *See—*
Bell, Richard P.; Rill, Karl F.; and Butler, John C., 4,266,674, Cl. 209-536.000.

Rilling, Raymond J.: *See—*
Mullet, David L.; Rilling, Raymond J.; and Voth, Elmer D., 4,266,617, Cl. 172-76.000.

Rising, Robert: *See—*
Scott, James W.; and Rising, Robert, 4,266,960, Cl. 65-4.00R.

Ritchie, John G.: *See—*
Thankachan, Chacko; Ritchie, John G.; Sahayada, Eugene; and Sengupta, Asok, 4,267,239, Cl. 428-425.100.

Ritzi, Thomas F., to Gem Instruments Corporation. Apparatus for visually duplicating gemstones. 4,266,871, Cl. 356-30.000.

Robert Bosch GmbH: *See—*
Baumann, Heinrich; and Schmidt, Gunther, 4,267,569, Cl. 364-431.000.
Heess, Gerhard; Schwab, Manfred; and Stroh, Walter, 4,266,447, Cl. 74-858.000.
Kulke, Gunther; and Hans, Waldemar, 4,266,729, Cl. 239-533.120.
Schuttenberg, Eckard; Hauser, Manfred; Hommen, Winfried; and Sopha, Klaus, 4,266,572, Cl. 137-625.630.
Wahl, Gunter; Kuhlmann, Gerhard; and Kranzler, Ernst, 4,266,789, Cl. 279-60.000.

Roberts, Robert, to Washington University. Radioimmunoassay for isoenzymes of creative kinase having a B-subunit and reagents therefor. 4,267,271, Cl. 435-7.000.

Robichaud, Roger E.: *See—*
Higgins, Robert W.; and Robichaud, Roger E., 4,266,852, Cl. 350-96.200.

Roccaforte, Harry I., to Champion International Corporation. Carton hanger-opener. 4,266,671, Cl. 206-626.000.

Rochlingburbach Weiterverarbeitung GmbH: *See—*
Meier, Friedrich; and Philipp, Hugo, 4,266,896, Cl. 409-299.000.

Rockwell, Harvey W.: *See—*
Drone, Gary A.; and Rockwell, Harvey W., 4,267,545, Cl. 340-52.00R.

Rockwell International Corporation: *See—*
Craiglow, Robert L., 4,267,592, Cl. 370-29.000.
Flanagan, Joseph E., 4,266,991, Cl. 149-42.000.

Rodder, Karl-Martin: *See—*
Hanisch, Horst; Rodder, Karl-Martin; Buning, Robert; and Hass, Hans-Jurgen, 4,267,093, Cl. 260-29.60H.

Rodmaker, Gerald: *See—*
Cummings, Charles A.; and Rodmaker, Gerald, 4,266,365, Cl. 46-33.000.

Roesner, Keith G., to Deere & Company. Paint spraying assembly. 4,266,504, Cl. 118-663.000.

Roger, Pierre: *See—*
Malen, Charles E.; Roger, Pierre; and Laubie, Michel, 4,267,345, Cl. 548-233.000.

Rogers, John W. Slitting cutter for partially slitting sheet metal web. 4,266,458, Cl. 83-864.000.

Rogers, Norman H.: *See—*
Luk, Kong; Clayton, John P.; and Rogers, Norman H., 4,267,316, Cl. 542-427.000.

Rohde, Carl W., to AMP Incorporated. Supporting device for toroidal coil having integral terminal housings. 4,267,404, Cl. 178-46.000.

Rohm and Haas Company: *See—*
Neely, James W., 4,267,055, Cl. 210-670.000.

Rokach, Joshua; Rooney, Clarence S.; and Cragoe, Edward J., Jr., to Merck & Co., Inc. Process for preparing 2,3-substituted-1,2,-isothiazolium salt antimicrobials. 4,267,341, Cl. 548-206.000.

Roland, David R.; and Wollangk, Edward G., to Kimberly-Clark Corporation. Wrapped folded tampons. 4,266,546, Cl. 128-285.000.

Rom, Josef; Alterman, Israel; and Shwartz, Josef, to Technion Research & Development Foundation Ltd.; and Alterman, Isreal. Method of extracting liquid and gaseous fuel from oil shale and tar sand. 4,266,609, Cl. 166-251.000.

Roman, Stephan. Rotor blade support setup for rotary wing aircraft. 4,266,912, Cl. 416-141.000.

Rombrecht, Hans-Malte: *See—*
Schmidt, Karl; Hansch, Ferdinand; Rombrecht, Hans-Malte; and Beck, Hans-Joachim, 4,267,232, Cl. 428-379.000.

Roof, Richard W., to Square D Company. Pre-step timer circuit for DC motor control. 4,267,493, Cl. 318-443.000.

Rooney, Clarence S.: *See—*
Rokach, Joshua; Rooney, Clarence S.; and Cragoe, Edward J., Jr., 4,267,341, Cl. 548-206.000.

Roper Corporation: *See—*
Bross, Kenneth L., 4,266,515, Cl. 123-198.00E.

Rose, Leonard; and Rose, Stanley E., to Rose, Leonard; and Rose, Stanley. Braille display reader. 4,266,936, Cl. 434-114.000.

Rose, Stanley: *See—*
Rose, Leonard; and Rose, Stanley E., 4,266,936, Cl. 434-114.000.

Rose, Stanley E.: *See—*
Rose, Leonard; and Rose, Stanley E., 4,266,936, Cl. 434-114.000.

Rosengren, Lars O. Tea maker. 4,266,471, Cl. 99-305.000.

Rosier, Jean-Claude, to U.S. Philips Corporation. Electron multiplier device comprising microchannel plates with optical feedback suppression for image intensifier tubes. 4,267,442, Cl. 250-207.000.

Rossman, Dale W. Boat seat tackle box. 4,266,707, Cl. 224-275.000.

Rossmy, Gerd: *See—*
Lidy, Werner; Rossmy, Gerd; and Kollmeier, Hans-Joachim, 4,267,078, Cl. 260-2.300.

Rost, Arno: *See—*
Pogoda, Dieter; Petters, Claus; and Rost, Arno, 4,267,147, Cl. 264-571.000.

Rothenberg, Alan S.; and Desmond, Michael N., to American Cyanamid Company. Preparation of N-substituted acrylamide monomers having cationic substituents. 4,267,372, Cl. 564-205.000.

Rothwarf, Allen, to University of Delaware. Thin film photovoltaic cells. 4,267,398, Cl. 136-256.000.

Roullet, Gilbert, to Rhone-Poulenc Industries. Process for the manufacturing of bioriented hollow bodies. 4,267,143, Cl. 264-516.000.

Rowan, Robert A.; and Mathis, Leroy. Portable silo. 4,266,510, Cl. 119-51.00R.

Rubel, Frederick, Jr.: *See*—
Hager, Donald G.; and Rubel, Frederick, Jr., 4,267,057, Cl. 210-678.000.
Rubens, Harry E., to Institute of Applied Biology Charitable Research Trust. Pen with retractable point. 4,266,881, Cl. 401-32.000.
Rubin, Lawrence M.: *See*—
Bilane, Glenn B.; Rubin, Lawrence M.; Soffa, Albert; and Vilenski, Dan, 4,266,710, Cl. 228-4.500.
Ruchti, Heinz, to General Diving Corporation. Pressure regulator. 4,266,538, Cl. 128-204.260.
Ruckstuhl, Konrad; Silvano, Serafin L.; and Beier, Kurt W., to SPM Group, Inc. Apparatus for separation of material of heterogeneous character. 4,266,676, Cl. 209-672.000.
Rudolph, Hans: *See*—
Dhein, Rolf; Poetter, Gerswid; and Rudolph, Hans, 4,267,082, Cl. 260-23.0AR.
Ruegg, Rudolf: *See*—
Bollag, Werner; Ruegg, Rudolf; and Ryser, Gottlieb, 4,267,382, Cl. 568-442.000.
Ruperez, Armando. Sugar dispenser. 4,266,695, Cl. 222-185.000.
Rush-Presbyterian-St. Luke Medical Center: *See*—
Bacus, James W., 4,266,505, Cl. 118-699.000.
Russak, Michael A.: *See*—
Chen, Schoen-nan; Russak, Michael A.; Witzke, Horst; Reichman, Joseph; and Deb, Satyendra K., 4,266,338, Cl. 29-623.200.
Russell, Roger H., to McIntosh Laboratory, Inc. Stereo speaker system for creating stereo images. 4,267,405, Cl. 179-1.00E.
Russell, Steven J.: *See*—
Williams, Malcolm; Tingey, Albert R.; Southgate, John P.; and Russell, Steven J., 4,266,522, Cl. 123-492.000.
Rustenburg, William C. Digital frequency divider. 4,267,512, Cl. 328-48.000.
Ruszala, Frederick B.: *See*—
Power, Joseph S.; and Ruszala, Frederick B., 4,267,576, Cl. 364-578.000.
Ruth, Harvey L.; Schneider, Michael H.; and Phelan, Michael B., to ACF Industries, Incorporated. Carburetor bowl vent. 4,267,129, Cl. 261-72.00R.
Ruth, Jerry L.: *See*—
Bergstrom, Donald E.; and Ruth, Jerry L., 4,267,171, Cl. 424-180.000.
Ryaby, John P.; and Pilla, Arthur A., to Electro-Biology, Inc. Modification of the growth, repair and maintenance behavior of living tissues and cells by a specific and selective change in electrical environment. 4,266,532, Cl. 128-1.500.
Ryaby, John P.; and Pilla, Arthur A., to Electro-Biology, Inc. Modification of the growth, repair and maintenance behavior of living tissues and cells by a specific and selective change in electrical environment. 4,266,533, Cl. 128-1.500.
Ryan, Leo F., to Ecodyne Corporation. Fluid filtration method and apparatus. 4,267,039, Cl. 210-767.000.
Rynyk, Douglas W., to Canada Square Management Ltd. Material handling apparatus. 4,266,900, Cl. 414-285.000.
Ryser, Gottlieb: *See*—
Bollag, Werner; Ruegg, Rudolf; and Ryser, Gottlieb, 4,267,382, Cl. 568-442.000.
Rysikhin, Anatoly I.: *See*—
Nefedov, Boris K.; Manov-Juvensky, Vladimir I.; Dergunov, Jury I.; Rysikhin, Anatoly I.; and Chimishkian, Alexandr L., 4,267,070, Cl. 252-429.00R.
Saab-Scania Aktiebolag: *See*—
Nilsson, Dan L.; and Danielsson, Joel L., 4,266,630, Cl. 180-291.000.
Sachdev, Krishna G.: *See*—
Bloom, Stanley M., deceased; and Sachdev, Krishna G., 4,267,254, Cl. 430-245.000.
Bloom, Stanley M., deceased; and Sachdev, Krishna G., 4,267,256, Cl. 430-251.000.
Sachetto, Jean-Pierre; Regnault, Alain; Cuccolo, Sergio; Tournier, Herve; and Armanet, Jean-Michel, to Battelle Memorial Institute. Process for the preparation of lactosylurea, its purification and its conversion to the corresponding N-hydroxymethylated derivative. 4,267,314, Cl. 536-53.000.
Saegusa, Katsumi: *See*—
Niimi, Yukihisa; and Saegusa, Katsumi, 4,267,077, Cl. 252-545.000.
Safety Research & Engineering Corporation: *See*—
Barabino, William A.; and Cook, Edward J., 4,266,633, Cl. 188-1.00A.
Sage, David M.; and Sage, George E. Variable reactance alignment detector and control. 4,266,732, Cl. 239-720.000.
Sage, George E.: *See*—
Sage, David M.; and Sage, George E., 4,266,732, Cl. 239-720.000.
Sahayada, Eugene: *See*—
Thankachan, Chacko; Ritchie, John G.; Sahayada, Eugene; and Sengupta, Asok, 4,267,239, Cl. 428-425.100.
Sahm, William H., III, to General Electric Company. Electrically heatable windshield heater control circuit. 4,267,433, Cl. 219-491.000.
Saint-Gobain Industries: *See*—
Grassin, Jerome; Thouvenin, Maurice; and Epie, Jean-Claude, 4,266,331, Cl. 29-449.000.
Saito, Ichiyoshi: *See*—
Uehara, Tsutomu; Oguchi, Toshihiko; Kubo, Tsutomu; Suzuki, Yukio; Nakagawa, Toshiharu; and Saito, Ichiyoshi, 4,266,503, Cl. 118-657.000.
Saito, Yoshihisa: *See*—
Kamiya, Takashi; Saito, Yoshihisa; Teraji, Tsutomu; Nakaguti, Osamu; and Oku, Teruo, 4,267,340, Cl. 548-187.000.
Saito, Yoshio: *See*—
Matsui, Takahiro; and Saito, Yoshio, 4,266,760, Cl. 269-323.000.
Saitoh, Shigeru, to Masudaya Toy Company Limited. Toy racing car and circuit. 4,266,769, Cl. 273-86.00B.
Sakaguchi, Shinji: *See*—
Karino, Yukio; Sakaguchi, Shinji; and Sakakibara, Yoshio, 4,267,262, Cl. 430-463.000.
Sakai, Yoshihiro; and Takahashi, Jun, to NHK Spring Co., Ltd. Method for manufacturing a taper spring. 4,266,418, Cl. 72-197.000.
Sakakibara, Naoji; and Hashimoto, Nobuyuki. Differential pressure switch device responsive to differential pressure and temperature change. 4,266,517, Cl. 123-333.000.
Sakakibara, Yoshio: *See*—
Karino, Yukio; Sakaguchi, Shinji; and Sakakibara, Yoshio, 4,267,262, Cl. 430-463.000.
Sakane, Kazuo: *See*—
Kamiya, Takashi; Teraji, Tsutomu; Nakai, Yoshiharu; Sakane, Kazuo; and Goto, Jiro, 4,267,176, Cl. 424-246.000.
Sakanoue, Seiki; Waki, Kokichi; Tsubota, Motohiko; Takahashi, Osamu; and Nakatsuka, Asao, to Fuji Photo Film Co., Ltd. Color diffusion transfer photographic element. 4,267,250, Cl. 430-214.000.
Sakashita, Nobuyuki: *See*—
Nishiyama, Ryuzo; Kimura, Fumio; Haga, Takahiro; Sakashita, Nobuyuki; and Nishikawa, Tetsuji, 4,266,963, Cl. 71-92.000.
Sakawaki, Shinichi, to Fuji Photo Film Co., Ltd. Spin coating process. 4,267,212, Cl. 427-240.000.
Sakura Color Products Corporation: *See*—
Ishigaki, Kazumi, 4,266,667, Cl. 206-469.000.
Sakurada, Ichio: *See*—
Nitta, Minoru; Kajinaga, Yoshihiro; Sakurada, Ichio; Ogura, Kuniaki; and Ito, Shunji, 4,266,974, Cl. 75-251.000.
Sakurada, Nobuaki: *See*—
Shinoda, Nobuhiko; Ito, Tadashi; Ito, Fumio; Mashimo, Yukio; and Sakurada, Nobuaki, 4,267,437, Cl. 235-92.0PE.
Sakurazawa, Hatsuo. Conveyor device for supplying bulk foods in a measured manner. 4,266,696, Cl. 222-197.000.
Saleh, Adel A. M., to W. L. Keefauver, Bell Laboratories. Adjustable microstrip and stripline tuners. 4,267,532, Cl. 333-33.000.
Salewski, Jurgen: *See*—
Bayer, Karl; Butt, Heinz G.; and Salewski, Jurgen, 4,266,888, Cl. 405-202.000.
Salisbury, Glenn C., to International Telephone and Telegraph Corporation. Coupler for a concentric core optical fiber. 4,266,851, Cl. 350-96.150.
Salmond, William G., to Upjohn Company, The. Compounds and process. 4,267,117, Cl. 260-397.200.
Salomon, Georges P. J., to Etablissements Francois Salomon et Fils. Braking device for skis. 4,266,801, Cl. 280-605.000.
Saltin, Malte, to Aktiebolaget Bofors. Fire control device. 4,266,463, Cl. 89-41.0AA.
Salvi, Theodore C.: *See*—
Paxton, Alan H.; and Salvi, Theodore C., 4,267,524, Cl. 331-94.50C.
Samolis, Alfonso A., to Christy Concrete Products, Inc. High strength cover for underground utility box. 4,266,380, Cl. 52-19.000.
Samson, Marc: *See*—
Bonnemann, Helmut; and Samson, Marc, 4,267,329, Cl. 546-4.000.
San-O Industrial Co., Ltd.: *See*—
Arikawa, Hiroo, 4,267,543, Cl. 337-255.000.
Sanders, Daniel: *See*—
Sanders, Earl; and Sanders, Daniel, 4,266,792, Cl. 280-153.00R.
Sanders, Earl; and Sanders, Daniel, to Model A and Model T Car Reproduction Corporation, The. Vehicle fender and running board support. 4,266,792, Cl. 280-153.00R.
Sanders, Eugene D. Composite panel and process of its manufacture. 4,267,222, Cl. 428-150.000.
Sandoval, Narciso; and Curten, Jean L. Apparatus for aiding patients to ambulate. 4,266,765, Cl. 272-70.300.
Sandoz Ltd.: *See*—
Ascher, Gerd, 4,267,321, Cl. 544-030.000.
Frey, Wolfgang; and Schoenauer, Wolfgang, 4,267,115, Cl. 260-373.000.
Sankin Industry Co., Ltd.: *See*—
Kohmura, Tamotsu; and Yoshimine, Jun-ichi, 4,267,133, Cl. 264-18.000.
Sanmatsu Kogyo Co., Ltd.: *See*—
Yoritomi, Kenzaburo; Kezuka, Teruo; and Moriya, Mitsumasa, 4,267,054, Cl. 210-659.000.
Sannan, Takanori; and Horiguchi, Shojiro, to Dainichiseika Color & Chemicals Mfg. Co. Ltd. Saccharide derivative having ureido group. 4,267,313, Cl. 536-18.000.
Sanraku-Ocean Co., Ltd.: *See*—
Oki, Toshikazu; Yoshimoto, Akihiro; Inui, Taiji; Takeuchi, Tomio; and Umezawa, Hamao, 4,267,312, Cl. 536-17.00A.
Sapunarov, Ivan M.: *See*—
Stoev, Stoycho M.; Sapunarov, Ivan M.; and Ivanov, Vladimir K., 4,267,046, Cl. 210-780.000.
Sasaki, Kenji: *See*—
Nakajima, Koichi; Ishiguro, Tomoji; Okamoto, Tokuhiko; Konaka, Minoru; Nagai, Minoru; Higuchi, Kanji; and Sasaki, Kenji, 4,267,483, Cl. 313-143.000.
Sasaki, Umekichi; Tsunemi, Masaaki; Yamada, Kaichi; and Morikawa, Yoshiyuki, to Nippon Oil Company, Ltd.; and Matsushita Electric

Industrial Co., Ltd. Refrigeration lubricating oil compositions. 4,267,064, Cl. 252-52.00A.
Sasazawa, Koji; Kitamoto, Tatsuji; Akashi, Goro; Masaki, Kouichi; and Dezawa, Shinichiro, to Fuji Photo Film Co., Ltd. Process for producing cobalt-containing ferromagnetic iron oxide powder. 4,267,207, Cl. 427-129.000.
Sasuga, Tadashi: *See*—
Koike, Wataro; Sasuga, Tadashi; and Yazawa, Chihiro, 4,267,317, Cl. 542-416.000.
Sato, Akira, to Sony Corporation. UHF electronic tuner. 4,267,604, Cl. 455-193.000.
Sato, Chikara: *See*—
Iida, Tetsuya; Sato, Chikara; and Suzuki, Yasoji, 4,267,517, Cl. 330-253.000.
Sato, Fumiyoshi, to Nissan Motor Company, Limited. Automotive ash tray assembly. 4,266,836, Cl. 312-246.000.
Sato, Kazuo; Asahi, Akira; and Koyama, Takahiro, to Daicel Ltd. Melt-coated preparation containing sorbic acid. 4,267,198, Cl. 426-332.000.
Sato, Makoto; Ohmori, Taiji; and Tsuchiya, Yoshikazu, to Honda Giken Kogyo Kabushiki Kaisha. Method of preventing skid of wheels of a vehicle. 4,266,833, Cl. 303-106.000.
Sato, Masaru; and Amano, Toshio, to Sony Corporation. Channel selecting apparatus for use with signal receiver and signal recorder. 4,267,563, Cl. 358-127.000.
Sato, Ryuichi: *See*—
Toyoshima, Shigeshi; Sato, Ryuichi; Ito, Koichi; Shinohara, Toshio; and Arai, Masatoshi, 4,267,172, Cl. 424-184.000.
Sato, Takeshi: *See*—
Kitazawa, Yoichi; Sato, Takeshi; and Tsuji, Hisao, 4,266,995, Cl. 156-123.00R.
Satoh, Ryozo, to Tel-Thermco Engineering Co., Ltd. Cap-mounting mechanism for apparatus for thermal treatment of semiconductors. 4,266,507, Cl. 118-733.000.
Sauder, Larry D. Spark plug with hot/sharp ground electrode. 4,267,481, Cl. 313-139.000.
Saunders, James F.; and Krocker, Robert E., to Trane Company, The. Method and apparatus for controlling comfort conditions including setback. 4,266,599, Cl. 165-2.000.
Sawa, Seiji, to Minolta Camera Kabushiki Kaisha. Eye fundus camera. 4,266,861, Cl. 351-7.000.
Sawhill, James W., to Pacific Kenyon Corporation. Animal feed supplement as a thixotropic stable suspension. 4,267,197, Cl. 426-69.000.
Scarborough, Edward D., Jr.: *See*—
Souder, James J., Jr.; Scarborough, Edward D., Jr.; and Fox, Merlin D., 4,266,747, Cl. 248-280.100.
Scarola, Leonard S.: *See*—
Kurtz, Stuart J.; Blakeslee, Theodore R., III; and Scarola, Leonard S., 4,267,146, Cl. 264-564.000.
Schade, Otto H., Jr., to RCA Corporation. Operational transconductance amplifiers with non-linear component current amplifiers. 4,267,519, Cl. 330-255.000.
Schaefer, Dieter: *See*—
Motz, Herbert; Schaefer, Dieter; Huebner, Werner; and Mayer, Dieter, 4,267,203, Cl. 427-48.000.
Schael, Wilfried, to Fresenius, Eduard; and Chemisch-pharmazeutische Industrie KG, Apparatebau KG. Apparatus for the ultrafiltration control in connection with the hemodialysis. 4,267,041, Cl. 210-109.000.
Schaffer, Stephen P.: *See*—
Guzowski, Matthew M.; Schaffer, Stephen P.; and Wright, David C., 4,266,973, Cl. 75-134.00N.
Schal, Wilfried, to Dr. Edward Fresenuis, Chemischpharmazeutische Industrie KG, Apparatebau KG. Hemodialysis apparatus. 4,267,040, Cl. 210-104.000.
Schaper, Ulf-Armin; Conrad, Jens; and Bruns, Klaus, to Henkel Kommanditgesellschaft auf Aktien. Perfume compositions containing esters of 3,5,5-trimethylhexanoic acid. 4,267,075, Cl. 252-522.00R.
Schaus, Orland O., to Canadian Gas Research Institute. Flue heat exchanger. 4,266,513, Cl. 122-155.00A.
Scheibe, Joachim; and Kuhn, Helmut, to Carl Freudenberg, Firma. Reinforced plastic belt loop. 4,267,139, Cl. 264-229.000.
Schering Corporation: *See*—
Draper, Richard W., 4,267,173, Cl. 424-243.000.
Neustadt, Bernard R.; and Gold, Elijah H., 4,267,193, Cl. 424-309.000.
Schiher, Stanley C.; and Renjilian, Armen, to Albany International Corp. Press fabric resistant to wad burning. 4,267,227, Cl. 428-234.000.
Schindler, Hans R.; and Vettiger, Peter, to International Business Machines Corporation. Method and apparatus for the transmission of speech signals. 4,267,407, Cl. 179-15.55R.
Schipper, Philipp: *See*—
Bruckner, Elmar; Gausmann, Hans; Schipper, Philipp; and Tausch, Walter, 4,267,149, Cl. 422-65.000.
Schlegel, Franz, to Optische Werke G. Rodenstock. Optical system for night-vision glasses. 4,266,848, Cl. 350-8.000.
Schlimper, Hans-Ulrich: *See*—
Diessel, Paul; Perner, Johannes; Leutner, Bernd; and Schlimper, Hans-Ulrich, 4,267,068, Cl. 252-179.000.
Schloth, Arthur P., to International Telephone and Telegraph Corporation. Quick response hydraulic shock suppressor for piping systems. 4,266,639, Cl. 188-311.000.
Schlumberger Technology Corp.: *See*—
Johnstone, Charles W., 4,267,447, Cl. 250-262.000.
Schmidt, Gunther: *See*—
Baumann, Heinrich; and Schmidt, Gunther, 4,267,569, Cl. 364-431.000.
Schmidt, Karl; Hansch, Ferdinand; Rombrecht, Hans-Malte; and Beck, Hans-Joachim, to Dr. Beck & Co. Aktiengesellschaft. Conductors having insulation of polyester imide resin. 4,267,232, Cl. 428-379.000.
Schmidt, LaVern. Compact position lock tool box. 4,266,835, Cl. 312-244.000.
Schmidt, Robert J.; and Imai, Tamotsu, to UOP Inc. Hydration of olefinic compounds with dilute sulfuric acid and cobalt sulfate. 4,267,397, Cl. 568-899.000.
Schmitt, Frederick L.: *See*—
Mookherjee, Braja D.; Mussinan, Cynthia J.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,267,076, Cl. 252-522.00R.
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Granda, Edward J.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,267,066, Cl. 252-174.110.
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,267,067, Cl. 252-174.110.
Schmitt, Kirk D.: *See*—
Chen, Catherine S. H.; Schmitt, Kirk D.; and Williams, Albert L., 4,267,123, Cl. 260-501.120.
Schmitz, Gunter, to Mannesmann Demag AG. Support for a metallurgical vessel. 4,266,758, Cl. 266-244.000.
Schmitz, Henry: *See*—
Kaneko, Takushi; Essery, John M.; Schmitz, Henry; and Doyle, Terrence W., 4,267,113, Cl. 260-345.200.
Schmitz, Ruediger: *See*—
Brand, Uwe; Fuchs, Hugo; and Schmitz, Ruediger, 4,267,105, Cl. 260-239.30A.
Schmitz, Werner: *See*—
Henne, Werner; Dunweg, Gustav; Schmitz, Werner; Pohle, Raimund; and Lawitzki, Friedrich, 4,267,047, Cl. 210-490.000.
Schmitz, Wilfried: *See*—
Feller, Otto; Skrobek, Alois; and Schmitz, Wilfried, 4,266,329, Cl. 29-222.000.
Schmohl, Michael W., to Uniroyal GmbH. Continuous sole for sports shoe. 4,266,349, Cl. 36-32.00R.
Schnadt, Robert: *See*—
Haug, Werner; Gschwendtner, Joerg; and Schnadt, Robert, 4,267,465, Cl. 307-238.300.
Schneider, Manfred; Kahmann, Gottfried; Gohler, Wolfgang; and Kircheiss, Andreas, to Textima, VEB Wirkmaschinenbau-Karl-Marx Stadt. Method and warp knitting machine for the manufacture of a looped pile warp knit fabric having a pile pattern. 4,266,410, Cl. 66-84.00R.
Schneider, Michael H.: *See*—
Ruth, Harvey L.; Schneider, Michael H.; and Phelan, Michael B., 4,267,129, Cl. 261-72.00R.
Schneider, Paul A.; and Eliassen, Carlo, to Ardal Og Sunndal Verk A.S. Suction tube assembly for ring furnace. 4,266,316, Cl. 15-304.000.
Schnur, Rodney C., to Pfizer Inc. Spiro-oxazolidindiones. 4,267,342, Cl. 548-216.000.
Schoen, Donald W.: *See*—
Matthys, Bernard A.; Schoen, Donald W.; and Anderson, Carl E., 4,266,953, Cl. 55-294.000.
Retka, Thomas J.; and Schoen, Donald W., 4,266,830, Cl. 299-87.000.
Schoenauer, Wolfgang: *See*—
Frey, Wolfgang; and Schoenauer, Wolfgang, 4,267,115, Cl. 260-373.000.
Scholl, Hans-Joachim; and Zenner, Armin, to Bayer Aktiengesellschaft. Preparation of aromatic urethanes. 4,267,353, Cl. 560-24.000.
Schon & Cie GmbH Maschinenfabrik: *See*—
Winter, Gerhard, 4,266,311, Cl. 12-10.100.
Schonmeier, Herbert, to Jagenberg Werke AG. Method and apparatus for the modulated raising of the carriages of a wind-up roll in the centerless winding of webs. 4,266,736, Cl. 242-66.000.
Schoofs, Franciscus A. C. M., to U.S. Philips Corporation. Arrangement for applying a signal to a transmission line. 4,267,408, Cl. 179-77.000.
Schotte, Dietwald: *See*—
Milutzki, Udo; Gaus, Harry; Schotte, Dietwald; and Ramspeck, Klaus, 4,266,783, Cl. 369-41.000.
Schreckenberg, Manfred: *See*—
Konig, Klaus; Schreckenberg, Manfred; Lindner, Christian; Suling, Carlhans; and Freitag, Dieter, 4,267,303, Cl. 528-171.000.
Schreckling, Kurt: *See*—
Breuer, Wolfram; Becker, Wolf-Jurgen; Deprez, Jacques; Drope, Eckard; Kaufmann, Karl-Heinz; and Schreckling, Kurt, 4,267,030, Cl. 204-278.000.
Schreiber, Karl J., to Polaroid Corporation. Novel photographic processing composition. 4,267,255, Cl. 430-245.000.
Schreiber, Roland: *See*—
Betzl, Hermann; Kuenemund, Friedrich; and Schreiber, Roland, 4,267,535, Cl. 333-165.000.
Schroeder, Clifford A.; Fogg, Ralph L.; Farason, Harry J.; and Voorhees, Robert E., to C. A. Schroeder Inc. Universal air diffuser. 4,266,470, Cl. 98-40.00R.
Schroeder, George F.; and Krupick, Walter J., to Singer Company, The. Gyro motor control. 4,266,432, Cl. 74-5.700.
Schuette, Henry W., to Wellons, Inc. Storage bin having driven agitator. 4,266,901, Cl. 414-305.000.

Schultz, Robert J.; and Starks, Fred W., to Starks Associates, Inc. N-(Phosphonoacetyl)-L-aspartic acid compounds. 4,267,126, Cl. 260-942.000.

Schuttenberg, Eckard; Hauser, Manfred; Hommen, Winfried; and Sopha, Klaus, to Robert Bosch GmbH. Electrohydraulic directional control valve system. 4,266,572, Cl. 137-625.630.

Schwab, Jean-Francois: *See*—
Sudler, Roland; and Schwab, Jean-Francois, 4,267,472, Cl. 310-49.00R.

Schwab, Manfred: *See*—
Heess, Gerhard; Schwab, Manfred; and Stroh, Walter, 4,266,447, Cl. 74-858.000.

Schwartz, Kenneth P.: *See*—
Perez, David J.; and Schwartz, Kenneth P., 4,266,742, Cl. 244-63.000.

Schwartz, Werner; Fischer, Peter; and Traulsen, Heinrich, to Metallgesellschaft Aktiengesellschaft. Continuous process of converting non-ferrous metal sulfide concentrates. 4,266,971, Cl. 75-69.000.

Schweikl, Ludwig; Greune, Christian; and Lottes, Paul, to Motoren- und Turbinen-Union Munchen GmbH. Exhaust section of a reaction engine. 4,266,725, Cl. 239-265.190.

Scicluna, Augustin: *See*—
Prudhon, Francois; and Scicluna, Augustin, 4,267,131, Cl. 261-153.000.

Science Union et Cie: *See*—
Malen, Charles E.; Roger, Pierre; and Laubie, Michel, 4,267,345, Cl. 548-233.000.

Science Union et Cie, Societe Francaise de Recherche Med.: *See*—
Regnier, Gilbert; Laubie, Michel; and Poignant, Jean-Claude, 4,267,178, Cl. 424-250.000.

SCM Corporation: *See*—
Kane, Bernard J.; and Von Genk, Richard A., 4,267,366, Cl. 560-231.000.

Scott, James W.; and Rising, Robert, to Owens-Corning Fiberglas Corporation. Method and apparatus for producing fibrous wool packs. 4,266,960, Cl. 65-4.00R.

Scott, Richard M.; and Armitage, Geoffrey D., to Shell Oil Company. Production of herbicidally-active derivatives of alanine. 4,267,355, Cl. 560-43.000.

Seapower, Inc.: *See*—
Benson, Robert A., 4,267,043, Cl. 210-241.000.

Seawell, Albert C. Methods of using chlamydia vaccine for preventing and treating bovine diseases. 4,267,170, Cl. 424-88.000.

Segrott, Leslie, to Du Pont de Nemours, E. I., and Company. Pin socket. 4,266,838, Cl. 339-17.00C.

Seidler, Jack. Circuit holder. 4,266,840, Cl. 339-75.00M.

Seiko Koki Kabushiki Kaisha: *See*—
Kitai, Kiyoshi; Nagaoka, Shinji; and Takazawa, Yuzuru, 4,267,440, Cl. 250-201.000.

Sekisui Kagaku Kogyo Kabushiki Kaisha: *See*—
Kodera, Yoshiaki; Watanabe, Kiyoyuki; and Kusu, Takayuki, 4,266,370, Cl. 47-29.000.

Selbeck, Harald; Wulff, Claus; Hucks, Uwe; Tresper, Erhard; and Vernaleken, Hugo, to Bayer Aktiengesellschaft. Process for the production of phosphoric acid triesters. 4,267,127, Cl. 260-973.000.

Sellinger, Martin S., to Keene Corporation. Outdoor junction box. 4,266,683, Cl. 220-3.200.

Seneker, James A., to Ameron, Inc. High solids polyurethane coatings. 4,267,081, Cl. 260-22.0TN.

Sengupta, Asok: *See*—
Thankachan, Chacko; Ritchie, John G.; Sahayada, Eugene; and Sengupta, Asok, 4,267,239, Cl. 428-425.100.

Seregely, Daniel W. Asynchronous slapping musical instrument. 4,266,459, Cl. 84-402.000.

Sergent, Andre, to Petit & Cie. Tank filling limiter. 4,266,582, Cl. 141-198.000.

Serono Laboratories Inc.: *See*—
Bigazzi, Mario, 4,267,101, Cl. 260-112.00R.

Setala, Pekka T.; Makipirtti, Simo A. I.; and Heino, Heimo J., to Outokumpu Oy. Apparatus for the vaporization of elemental sulfur by means of carrier gas. 4,266,512, Cl. 122-5.50R.

Sevcik, Stanislav; Trekoval, Jiri; Holata, Jan; and Stamberg, Jiri, to Ceskoslovenska akademie ved. Polymers of pivaloyloxyalkyl methacrylates, method for their preparation and modification. 4,267,287, Cl. 525-271.000.

Shalaev, Vladimir G.: *See*—
Vitchenko, Vladimir S.; Smirnov, Gennady K.; and Shalaev, Vladimir G., 4,267,475, Cl. 310-232.000.

Sharp Kabushiki Kaisha: *See*—
Hashimoto, Shintaro; and Nishimura, Toshio, 4,267,577, Cl. 364-707.000.

Shatz, Mark F. Bed covering. 4,266,308, Cl. 5-494.000.

Shaw, Anthony R.: *See*—
Krueger, Wallace F.; and Shaw, Anthony R., 4,266,383, Cl. 52-400.000.

Shea, Wm. M.: *See*—
Hollingsworth, Elmont E.; Shea, Wm. M.; and Spitzer, Daniel M., Jr., 4,266,863, Cl. 354-5.000.

Shearpower International Corporation: *See*—
Rick, Randy L.; Mazzotta, Paul F.; and Daiello, Cosimo D., 4,267,431, Cl. 219-225.000.

Shell Oil Company: *See*—
Dickson, Leon L.; and Ellison, Bart T., 4,267,148, Cl. 422-53.000.
Nielsen, Robert P.; and Jecminek, Albert A., 4,267,073, Cl. 252-455.00R.
Scott, Richard M.; and Armitage, Geoffrey D., 4,267,355, Cl. 560-43.000.
Whitehead, Richard O., 4,267,283, Cl. 525-89.000.

Sher, Frank T.: *See*—
Beck, Boyd R.; Sher, Frank T.; and Tiers, George V. D., 4,267,213, Cl. 427-292.000.

Sherman, William F. Method of binding a phenol-based thermoplastic resin to a cured and molded-thermoset phenolic plastic. 4,267,290, Cl. 525-465.000.

Sherwood, Cy E., to Bendix Corporation, The. High voltage cable terminal. 4,266,841, Cl. 339-89.00C.

Shibata, Tadashi; and Iizuka, Hisakazu, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing a semiconductor device. 4,267,011, Cl. 156-628.000.

Shibata, Takehiko: *See*—
Suzuki, Koji; and Shibata, Takehiko, 4,267,511, Cl. 324-458.000.

Shibler, William: *See*—
Unetich, Robert M.; and Shibler, William, 4,267,487, Cl. 315-107.000.

Shibue, Toshiaki; and Nagayasu, Koichi, to Konishiroku Photo Industry Co., Ltd. Photographic films. 4,267,266, Cl. 430-530.000.

Shiell, Thomas J. Collinear four-point probe head and mount for resistivity measurements. 4,267,506, Cl. 324-158.00P.

Shigehara, Itaru: *See*—
Nishiyama, Ryuzo; Fujikawa, Kanichi; Nasu, Rikuo; and Shigehara, Itaru, 4,267,336, Cl. 546-302.000.

Shih, Stuart S.: *See*—
Heck, Roland H.; Oleck, Stephen M.; Shih, Stuart S.; and Wilson, Robert C., 4,267,033, Cl. 208-216.0PP.

Shimatake, Hirokazu; Ogawa, Shuichi; Uchida, Shigeru; Nara, Ryuichi; and Takagishi, Haruyoshi, to Nissan Motor Company, Limited. Spot welding machine for heavy-duty operations on surface contoured workpieces. 4,267,424, Cl. 219-86.410.

Shimizu, Norihiko: *See*—
Nishimura, Hideo; Tokura, Yasufumi; Unno, Kunihiko; Enomoto, Minoru; Yokoe, Isamu; Shimizu, Norihiko; and Ohmura, Haruo, 4,266,375, Cl. 51-165.710.

Shin-Etsu Chemical Co. Ltd.: *See*—
Toyoshima, Shigeshi; Sato, Ryuichi; Ito, Koichi; Shinohara, Toshio; and Arai, Masatoshi, 4,267,172, Cl. 424-184.000.

Shin Meiwa Industry Co., Ltd.: *See*—
Ago, Hitoshi, 4,266,455, Cl. 83-84.000.

Shinoda, Nobuhiko; Ito, Tadashi; Ito, Fumio; Mashimo, Yukio; and Sakurada, Nobuaki, to Canon Kabushiki Kaisha. Exposure control device for a camera. 4,267,437, Cl. 235-92.0PE.

Shinohara, Toshio: *See*—
Toyoshima, Shigeshi; Sato, Ryuichi; Ito, Koichi; Shinohara, Toshio; and Arai, Masatoshi, 4,267,172, Cl. 424-184.000.

Shinohara, Yoshiaki, to Kawasaki Steel Corporation. Heating furnace. 4,266,932, Cl. 432-194.000.

Shionogi & Co., Ltd.: *See*—
Nakagawa, Yuzo; Iwatani, Kouji; and Kadono, Tetsuro, 4,267,457, Cl. 250-522.000.

Shishido, Toetsu: *See*—
Yajima, Seishi; Okamura, Kiyohito; Shishido, Toetsu; and Hasegawa, Yoshio, 4,267,210, Cl. 427-226.000.
Yajima, Seishi; Okamura, Kiyohito; Shishido, Toetsu; and Hasegawa, Yoshio, 4,267,211, Cl. 427-228.000.

Shuler, Lucien B., to Caterpillar Tractor Co. Steering system with interlock valves. 4,266,626, Cl. 180-6.480.

Shwartz, Josef: *See*—
Rom, Josef; Alterman, Israel; and Shwartz, Josef, 4,266,609, Cl. 166-251.000.

Sickles, James E., to PPG Industries, Inc. Spray application of coating compositions utilizing induction and corona charging means. 4,266,721, Cl. 239-3.000.

SIE, Inc.: *See*—
Boop, Gene T., 4,266,613, Cl. 166-299.000.

Sieglitz, Manfred, to Gustav F. Gerdts KG. Angle valve. 4,266,570, Cl. 137-613.000.

Siemens Aktiengesellschaft: *See*—
Betzl, Hermann; Kuenemund, Friedrich; and Schreiber, Roland, 4,267,535, Cl. 333-165.000.
Bodlaj, Viktor, 4,266,875, Cl. 356-381.000.
Braun, Rudiger, 4,267,570, Cl. 364-480.000.
Grassmann, Hans-Christian, 4,267,461, Cl. 307-105.000.
Kullmann, Dieter, 4,267,474, Cl. 310-52.000.
Lange, Gottfried, 4,267,450, Cl. 250-315.200.
Paulus, Irmo, 4,267,416, Cl. 200-144.00B.
Thomanek, Gerd, 4,267,582, Cl. 364-900.000.
Vandenbossche, Chris; and Vanhumbeeck, Jacky, 4,266,942, Cl. 23-230.00R.
Vogelsberg, Dieter, 4,266,398, Cl. 57-293.000.

Siemens Gammasonics, Inc.: *See*—
McKeighen, Ronald E.; and Buchin, Michael P., 4,267,584, Cl. 367-11.000.

Sih, John C., to Upjohn Company, The. 19-Hydroxy-19-methyl-6,9α-epoxymethano-PGF compounds. 4,267,114, Cl. 260-345.200.

Sih, John C., to Upjohn Company, The. 19-Hydroxy-19-methyl-6-oxo-PGF_1 sulfonylamides. 4,267,352, Cl. 560-12.000.

Sih, John C., to Upjohn Company, The. 13,14-Dihydro-inter-phenylene-11-deoxy-11-hydroxymethyl-19-oxo-PGE_1 compounds. 4,267,357, Cl. 560-53.000.

Sih, John C., to Upjohn Company, The. 19-Hydroxy-19-methyl-trans-2,3-didehydro-PG_1 compounds. 4,267,367, Cl. 562-503.000.

Sih, John C., to Upjohn Company, The. 19-Hydroxy-19-methyl-cis-4,5-didehydro-13,14-dihydro-PG_1 compounds. 4,267,368, Cl. 562-503.000.
Sih, John C., to Upjohn Company, The. 19-Hydroxy-19-methyl-trans-2,3-didehydro-13,14-dihydro-PG_1 compounds. 4,267,369, Cl. 562-503.000.
Sih, John C., to Upjohn Company, The. 19-Hydroxy-19-methyl-inter-oxa-PG_1 compounds. 4,267,370, Cl. 562-503.000.
Sih, John C., to Upjohn Company, The. 19-Hydroxy-6a-carba-PGI_2 amides. 4,267,371, Cl. 564-188.000.
Sih, John C., to Upjohn Company, The. 2-Decarboxy-2-hydroxymethyl-19-hydroxy-19-methyl-6A-carba-PGI_2 compounds. 4,267,395, Cl. 568-819.000.
Silfvast, William T.; Szeto, Leo H.; and Wood, Obert R., II, to Bell Telephone Laboratories, Incorporated. Recombination lasers with spatial variations in pumping. 4,267,525, Cl. 331-94.50G.
Silvano, Serafin L.: *See—*
Ruckstuhl, Konrad; Silvano, Serafin L.; and Beier, Kurt W., 4,266,676, Cl. 209-672.000.
Silverman, Richard: *See—*
Jezorek, Leigh; Pitel, Irving; and Silverman, Richard, 4,267,214, Cl. 427-341.000.
Simo, Thomas; and Rammler, Roland, to Metallgesellschaft Aktiengesellschaft. Process and separating and recovering solids and clear liquid phase from dispersions. 4,267,061, Cl. 210-772.000.
Simons, Richard W., to Stauffer Chemical Company. 2-(α-naphthoxy)-N,N-diethyl propionamide as an aqueous flowable concentrate. 4,266,965, Cl. 71-118.000.
Simpson, Gary R., to Honeywell Inc. Method of and apparatus for heat processing photosensitive material. 4,267,434, Cl. 219-499.000.
Sine, William A. Ball projecting and catching apparatus. 4,266,778, Cl. 273-324.000.
Singer Company, The: *See—*
Ketterer, Stanley J., 4,266,494, Cl. 112-184.000.
Ljung, Bo H. G.; and Williams, Charles J., 4,267,478, Cl. 310-315.000.
Schroeder, George F.; and Krupick, Walter J., 4,266,432, Cl. 74-5.700.
Singerman, Gary M.: *See—*
Hartle, Robert J.; and Singerman, Gary M., 4,266,947, Cl. 44-68.000.
Sivon, Robert L., to True Temper Corporation. Modularized railway crossing grade and modules therefor. 4,266,718, Cl. 238-9.000.
SK&F Lab Co.: *See—*
Lewis, Joseph J.; and Webb, Robert L., 4,267,337, Cl. 548-119.000.
Skahill, Richard J., to J.I. Case Company. Window wiper storage system. 4,266,315, Cl. 15-250.160.
Skeem, Wayne B. Round bale feeder. 4,266,899, Cl. 414-24.600.
SKF Compagnie d'Applications Mecaniques: *See—*
Boudet, Georges; and Desmoulins, Jean C., 4,266,451, Cl. 81-57.350.
Skrobek, Alois: *See—*
Feller, Otto; Skrobek, Alois; and Schmitz, Wilfried, 4,266,329, Cl. 29-222.000.
Skvorecz nee Hajnoczy, Marianne: *See—*
Dobo, Janos; Takacs, Erzsebet; Hortobagyi, Gyozo; Skvorecz nee Hajnoczy, Marianne; Kolbe, Ilona; and Hoffmann nee Vas, Katalin, 4,267,138, Cl. 264-117.000.
Slechta, Libor: *See—*
Reusser, Fritz; and Slechta, Libor, 4,267,112, Cl. 260-345.200.
Sloan, Cephas H.; Wright, Jerry A.; and Morie, Gerald P., to Eastman Kodak Company. Melt blowing process. 4,267,002, Cl. 156-276.000.
Smid, Peter M.: *See—*
Marx, Arthur F.; Smid, Peter M.; and Vellekoop, Pieter, 4,267,106, Cl. 260-239.570.
Smirnov, Anatoly I.: *See—*
Velikoselsky, Nikolai D.; Smirnov, Anatoly I.; Perets, Nikolai Y.; Vinogradov, Sergei S.; Podbeltsev, Viktor I.; and Lakhno, Pavel E., 4,266,680, Cl. 212-193.000.
Smirnov, Gennady K.: *See—*
Vitchenko, Vladimir S.; Smirnov, Gennady K.; and Shalaev, Vladimir G., 4,267,475, Cl. 310-232.000.
Smith, Brian F. Artifical bait. 4,266,360, Cl. 43-42.090.
Smith, David: *See—*
Panzik, Donald; and Smith, David, 4,266,540, Cl. 128-207.130.
Smith, David W., to National Distillers and Chemical Corp. Ruthenium catalyzed process for acetaldehyde and ethanol. 4,267,384, Cl. 568-462.000.
Smith International, Inc.: *See—*
Vezirian, Edward, 4,266,622, Cl. 175-366.000.
Smith, J. Harold, to United Technologies Corporation. Method for molding sheet material with parallel ribs on one side. 4,267,137, Cl. 264-113.000.
Smith, Richard A. G., to Beecham Group Limited. Enzyme preparation having affinity for water-immiscible liquids. 4,267,273, Cl. 435-44.000.
Smith, Roger M., to Caterpillar Tractor Co. Push-pull coupling for power scrapers. 4,266,798, Cl. 280-481.000.
Smith, Stephen L., to Motorola, Inc. NMOS Voltage reference generator. 4,267,501, Cl. 323-313.000.
Smiths Industries Limited: *See—*
Cross, David E., 4,266,815, Cl. 285-330.000.
Smock Material Handling Company, Inc.: *See—*
Herman, Donald G., 4,266,660, Cl. 198-781.000.
Smorodinnikov, Vladimir P.: *See—*
Birjukov, Mikhail N.; Maslov, Gennady N.; Smorodinnikov, Vladimir P.; Kulikov, Anatoly P.; Udilova, Ida G.; Zuev, Vladimir K.; Lukyanov, Anatoly A.; Tolstopyatov, Konstantin S.; Kalinichev, Alexandr E.; and Zhabin, Ivan Y., 4,266,922, Cl. 425-182.000.
SMR Corporation: *See—*
Thiene, Paul G., 4,267,490, Cl. 318-51.000.
Societe Anonyme Automobiles Citroen: *See—*
Perez, Jean; and Carnus, Jean-Claude, 4,266,524, Cl. 123-568.000.
Societe Anonyme de Telecommunications: *See—*
Guerpont, Maurice R., 4,267,507, Cl. 324-158.00P.
Societe Anonyme Francaise de Ferodo: *See—*
Bacher, Micher, 4,266,636, Cl. 188-76.000.
Societe Anonyme Francaise du Ferodo: *See—*
Stordeur, Yves A. H., 4,266,441, Cl. 74-523.000.
s.a. Texaco Belgium n.v.: *See—*
Maasbol, Alfred G.; and Dulog, Lothar G., 4,267,375, Cl. 568-57.000.
Societe de Paris et du Rhone: *See—*
Mazzorana, Alfred B., 4,266,642, Cl. 192-45.000.
Societe d'Etudes de Produits Chimiques: *See—*
Esanu, Andre, 4,267,181, Cl. 424-251.000.
Soderberg, Jon: *See—*
Frant, Martin S.; and Soderberg, Jon, 4,267,023, Cl. 204-1.00T.
Soes, Lucas: *See—*
Janssen, Theodorus M.; Gilissen, Hermanus P. J.; Soes, Lucas; Van Der Sanden, Ludovicus C.; and Van Dijk, Petrus R. M., 4,267,412, Cl. 200-6.00B.
Soffa, Albert: *See—*
Bilane, Glenn B.; Rubin, Lawrence M.; Soffa, Albert; and Vilenski, Dan, 4,266,710, Cl. 228-4.500.
Sogo, Shigeyuki: *See—*
Naito, Kazuaki; Tetekawa, Takaiki; Sogo, Shigeyuki; Higaki, Kazuhiko; Yasuoka, Tetu; and Hosoi, Hidetoshi, 4,266,885, Cl. 405-109.000.
Solar Southwest: *See—*
Behrendt, Bruce O.; Cisneros, Ignacio L.; Stephenson, Ronald B.; and Stephenson, Donald R., 4,266,531, Cl. 126-449.000.
Solomin, Vladimir A.: *See—*
Popov, Alexandr D.; Solomin, Vladimir A.; and Zvezdunov, Dmitry A., 4,267,471, Cl. 310-13.000.
Sommerfeld, Eugene G.: *See—*
Burkhart, Dean C.; Harper, Lee R.; and Sommerfeld, Eugene G., 4,267,288, Cl. 525-438.000.
Sony Corporation: *See—*
Osakabe, Yoshio; and Yasuda, Hiroshi, 4,267,603, Cl. 455-186.000.
Sato, Akira, 4,267,604, Cl. 455-193.000.
Sato, Masaru; and Amano, Toshio, 4,267,563, Cl. 358-127.000.
Tsukada, Keizo, 4,267,467, Cl. 307-597.000.
Umeda, Kaoru; and Harada, Hideo, 4,267,601, Cl. 455-165.000.
Sopha, Klaus: *See—*
Schuttenberg, Eckard; Hauser, Manfred; Hommen, Winfried; and Sopha, Klaus, 4,266,572, Cl. 137-625.630.
Souder, James J., Jr.; Scarborough, Edward D., Jr.; and Fox, Merlin D., to Positioning Devices, Incorporated. Equipoised articulated support arm. 4,266,747, Cl. 248-280.100.
South African Inventions Development Corp.: *See—*
Coetzer, Johan; and Thackeray, Michael M., 4,267,242, Cl. 429-104.000.
Southgate, John P.: *See—*
Williams, Malcolm; Tingey, Albert R.; Southgate, John P.; and Russell, Steven J., 4,266,522, Cl. 123-492.000.
Sparks, John W.; and Bader, Henry, to Polaroid Corporation. Process for preparing 4-aminopyrazolo-(3,4-d)pyrimidine. 4,267,324, Cl. 544-262.000.
Spaziante, Placido M.: *See—*
de Nora, Vittorio; Nidola, Antonio; Spaziante, Placido M.; and Bianchi, Giuseppe, 4,267,025, Cl. 204-82.000.
Spector, Donald. Toy cableway. 4,266,369, Cl. 46-260.000.
Spector, George: *See—*
Carbone, Peter; and Spector, George, 4,266,771, Cl. 273-150.000.
Spectra-Physics, Inc.: *See—*
Garbe, Reinhold F.; Esterl, Leo A.; and Koltun, Ronald E., 4,266,996, Cl. 156-154.000.
Speiser, Jeffrey M.: *See—*
Bond, James W.; Alsup, James M.; Speiser, Jeffrey M.; Whitehouse, Harper J.; and Lagnado, Isaac, 4,267,580, Cl. 364-824.000.
Speitel, Francois; and Speitel, Robert, to Teleplastics Industries S.A. Stopping device for a threaded neck container. 4,266,682, Cl. 215-331.000.
Speitel, Robert: *See—*
Speitel, Francois; and Speitel, Robert, 4,266,682, Cl. 215-331.000.
Spencer Wright Industries, Inc.: *See—*
Prichard, Richard J., 4,266,491, Cl. 112-79.00R.
Speranza, George P.: *See—*
Cuscurida, Michael; and Speranza, George P., 4,267,120, Cl. 260-463.000.
Speros, Dimitrios M.; and Speros, Philip C. Method and apparatus for solar distillation. 4,267,021, Cl. 202-176.000.
Speros, Philip C.: *See—*
Speros, Dimitrios M.; and Speros, Philip C., 4,267,021, Cl. 202-176.000.
Sperry Corporation: *See—*
Davis, William W., 4,267,518, Cl. 330-254.000.
Knepper, Larimer J.; McDuffie, James W.; and Wagstaff, Robert A., 4,266,392, Cl. 56-14.500.
Mahoney, Frank A., 4,266,479, Cl. 101-93.090.
Mast, Aquila D., 4,266,390, Cl. 56-1.000.

McDuffie, James W.; Knepper, Larimer J.; and Knipper, Larimer J., 4,266,391, Cl. 56-14.500.
Tanski, William J., 4,267,534, Cl. 333-153.000.
VanGinhoven, Robert M.; and Brown, Carl D., 4,266,394, Cl. 56-94.000.

Spinner, Georg; and Lang, Manfred. High-frequency terminating impedance. 4,267,531, Cl. 333-22.00R.

Spitzer, Daniel M., Jr.: *See—*
Hollingsworth, Elmont E.; Shea, Wm. M.; and Spitzer, Daniel M., Jr., 4,266,863, Cl. 354-5.000.

SPM Group, Inc.: *See—*
Ruckstuhl, Konrad; Silvano, Serafin L.; and Beier, Kurt W., 4,266,676, Cl. 209-672.000.

Sporl, Heinrich: *See—*
Troger, Johannes; Lauter, Gernot; and Sporl, Heinrich, 4,266,893, Cl. 409-206.000.

Sprague Electric Company: *See—*
Markarian, Mark; and Puppolo, Henry F., 4,266,332, Cl. 29-570.000.
Moresi, Joseph A., Jr., 4,267,566, Cl. 361-433.000.
Puppolo, Henry F.; and Markarian, Mark, 4,267,565, Cl. 361-433.000.

Sprang, Peter: *See—*
Helm, Siegfried; and Sprang, Peter, 4,266,911, Cl. 416-9.000.

Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, to International Flavors & Fragrances Inc. Process for augmenting or enhancing the aroma of a detergent using 2-oxabicyclooctane derivative. 4,267,067, Cl. 252-174.110.

Spring, Gorden W., to Tomy Kogyo Co., Inc. Competitive capture game. 4,266,767, Cl. 273-1.00R.

Square D Company: *See—*
Roof, Richard W., 4,267,493, Cl. 318-443.000.

Squires, Stanley C.: *See—*
Petersen, Larry D.; and Squires, Stanley C., 4,266,638, Cl. 188-218.00R.

Staats, Henry N., to General Binding Corporation. Heat reactivatible adhesive book binding. 4,266,812, Cl. 281-29.000.

Staedeli, Otto, to Maag Gear-Wheel & Machine Co. Ltd. Automatically engageable jaw clutch or the like. 4,266,647, Cl. 192-67.00A.

Staedtler & Uhl: *See—*
Egerer, Josef, 4,266,327, Cl. 28-299.000.

Stamberg, Jiri: *See—*
Sevcik, Stanislav; Trekoval, Jiri; Holata, Jan; and Stamberg, Jiri, 4,267,287, Cl. 525-271.000.

Stamicarbon, B.V.: *See—*
Bijen, Jan M. J. M., 4,267,136, Cl. 264-87.000.
Meyer, Peter J. N.; and Penders, Josef M., 4,267,362, Cl. 560-174.000.

Standard Oil Company, The: *See—*
Benton, Kenneth C.; White, James F.; Uebele, Curtis E.; and Weinert, Raymond J., Jr., 4,267,292, Cl. 526-79.000.

Standard Oil Company (Indiana): *See—*
McCollum, John D., 4,266,608, Cl. 166-250.000.
Swartz, Henry D., 4,267,223, Cl. 428-172.000.
Vasalos, Iacovos A., 4,267,072, Cl. 252-455.00Z.

Stanley, Glen L., to Jefferson Industries Company, The. Method and apparatus for separating honey from honeycombs. 4,266,309, Cl. 6-12.00R.

Starks Associates, Inc.: *See—*
Schultz, Robert J.; and Starks, Fred W., 4,267,126, Cl. 260-942.000.

Starks, Fred W.: *See—*
Schultz, Robert J.; and Starks, Fred W., 4,267,126, Cl. 260-942.000.

State of Rhode Island, Board of Regents for Education of the: *See—*
Birk, John R.; Kelley, Robert B.; and Tella, Richard P., 4,266,905, Cl. 414-627.000.

Stauffer Chemical Company: *See—*
Chang, Pei K.; and Concilio-Nolan, Mary C., 4,267,100, Cl. 260-112.00R.
Simons, Richard W., 4,266,965, Cl. 71-118.000.

Steadman, Robert W. Sun ray tracker. 4,266,530, Cl. 126-424.000.

Stedef S.A.: *See—*
Harmsen, John L., 4,266,720, Cl. 238-349.000.

Steffan, Guido: *See—*
Kaiser, Reinhard; and Steffan, Guido, 4,267,346, Cl. 548-262.000.

Steger, John J.: *See—*
Maas, Edward T., Jr.; and Steger, John J., 4,267,157, Cl. 423-303.000.

Steiger, Roger A., to PPG Industries, Inc. Submicron carbon-containing titanium boride powder and method for preparing same. 4,266,977, Cl. 106-43.000.

Stein, Marc T., to Medtronic, Inc. Sense amplifier for demand cardiac pacemaker. 4,266,551, Cl. 128-419.0PG.

Stella D'oro Biscuit Co. Inc.: *See—*
Monaco, George, 4,266,502, Cl. 118-16.000.

Stelter, Heino; Preiss, Manfred; and Polka, Udo. Wireless, multi-channel remote control unit for toys. 4,267,606, Cl. 455-603.000.

Stephenson, Donald R.: *See—*
Behrendt, Bruce O.; Cisneros, Ignacio L.; Stephenson, Ronald B.; and Stephenson, Donald R., 4,266,531, Cl. 126-449.000.

Stephenson, Rebecca A. G.: *See—*
DuBois, Grant E.; Stephenson, Rebecca A. G.; and Crosby, Guy A., 4,267,165, Cl. 424-48.000.

Stephenson, Robert L.: *See—*
Thomas, Rudy V.; and Stephenson, Robert L., 4,266,810, Cl. 280-802.000.

Stephenson, Ronald B.: *See—*
Behrendt, Bruce O.; Cisneros, Ignacio L.; Stephenson, Ronald B.; and Stephenson, Donald R., 4,266,531, Cl. 126-449.000.

Sterling, Stewart A.: *See—*
Kaae, James L.; Reynolds, George H.; Sterling, Stewart A.; and Yang, Ling, 4,267,019, Cl. 176-82.000.

Stetter, Jorg; Draber, Wilfried; Thomas, Rudolf; and Lunkenheimer, Winfried, to Bayer Aktiengesellschaft. N-Azolylalkyl-anilines. 4,267,338, Cl. 548-143.000.

Stetter, Jorg: *See—*
Jautelat, Manfred; Stetter, Jorg; Arlt, Dieter; and Kramer, Wolfgang, 4,267,381, Cl. 568-419.000.

Stiner, Roy E., to Brunswick Corporation. Clip for fishing reel. 4,266,739, Cl. 242-84.21R.

Stirling, Harold T. Dust treatment. 4,266,966, Cl. 75-25.000.

Stoev, Stoycho M.; Sapunarov, Ivan M.; and Ivanov, Vladimir K. Method and apparatus for dewatering of fine-grained materials. 4,267,046, Cl. 210-780.000.

Stone, Arnold F.; and Kinnard, William D., to CPS Industries. Method for producing tear tape and seal and tear line for packaging. 4,267,228, Cl. 428-297.000.

Stone, Frederick A., to Teleco Oilfield Services Inc. Hydraulic circuit for borehole telemetry apparatus. 4,266,606, Cl. 166-113.000.

Stopp, Fritz: *See—*
Lindner, Heinz; Stopp, Fritz; Georgie, Wolfgang; Oehm, Werner; Muller, Lisbet; and Graubner, Brigitte, 4,266,411, Cl. 66-84.00R.

Stordeur, Yves A. H., to Societe Anonyme Francaise du Ferodo. Positioning device with a pivotable positioning member. 4,266,441, Cl. 74-523.000.

Stork PMT B.V.: *See—*
van Mil, Martinus P. G., 4,266,322, Cl. 17-11.000.

Stout, Robert L., to Enzyme Technology, Inc. Method for the determination of antigens and antibodies using site-deactivating media. 4,267,270, Cl. 435-7.000.

Stradling, John H.; and Albrecht, Paul R., to J. H. Stradling, Inc. Reversing transmission. 4,266,643, Cl. 192-51.000.

Stratmann, Klaus: *See—*
Jochums, Peter; Stratmann, Klaus; Henkel, Egon; and Wildfurster, Heinrich, 4,266,484, Cl. 105-29.00R.

Stritzl, Karl: *See—*
Weigl, Erwin; and Stritzl, Karl, 4,266,806, Cl. 280-618.000.

Stroh, Walter: *See—*
Heess, Gerhard; Schwab, Manfred; and Stroh, Walter, 4,266,447, Cl. 74-858.000.

Strom, Holger, to Platmanufaktur Aktiebolaget. Transport device. 4,266,651, Cl. 198-345.000.

Stroud, Richard M.; and Kolakowski, Richard A., to Upjohn Company, The. Process and apparatus for the continuous molding of polymer foam bunstock having a substantially rectangular cross-section. 4,267,135, Cl. 264-51.000.

Struckmann, Holger. Apparatus and method of heating particulate material. 4,266,931, Cl. 432-105.000.

Strzepek, Stanley W.: *See—*
Bates, Herbert E.; and Strzepek, Stanley W., 4,267,010, Cl. 156-608.000.

Studiengesellschaft Kohle GmbH: *See—*
Bonnemann, Helmut; and Samson, Marc, 4,267,329, Cl. 546-4.000.

Sturos, John A.: *See—*
Barwise, Robert D.; Sturos, John A.; and Brumm, Douglas B., 4,266,675, Cl. 209-540.000.

Suarato, Antonino: *See—*
Masi, Paolo; Suarato, Antonino; Bernardi, Luigi; and Arcamone, Federico, 4,267,116, Cl. 260-376.000.

Sud-Chemie Aktiengesellschaft: *See—*
Maier, Franz, 4,267,162, Cl. 423-542.000.

Sudler, Roland; and Schwab, Jean-Francois, to Quarz-Zeit AG. Single phase stepping motor, particularly for clocks. 4,267,472, Cl. 310-49.00R.

Sugawara, Norio: *See—*
Nawa, Motoyuki; Takahashi, Yutaka; and Sugawara, Norio, 4,266,722, Cl. 239-590.500.

Sugi, Tomomitsu: *See—*
Chudo, Akira; Sugi, Tomomitsu; and Kataoka, Kouji, 4,266,980, Cl. 106-97.000.

Sugimoto, Naohiko; Horie, Ikutaro; Nagao, Kameji; Yoneyama, Masakazu; Nakayama, Yasuhiro; and Yamamoto, Nobuo, to Fuji Photo Film Co., Ltd. Photographic light-sensitive material. 4,267,265, Cl. 430-523.000.

Sugisawa, Ko: *See—*
Koshida, Daikichi; Sugisawa, Ko; Matsumura, Yasushi; and Taga, Kazumitsu, 4,267,199, Cl. 426-589.000.

Sugita, Yutaka: *See—*
Ohta, Norio; Ishida, Fumihiko; Ikeda, Tadashi; Ando, Keikichi; and Sugita, Yutaka, 4,267,230, Cl. 428-336.000.

Sugiura, Noboru: *See—*
Kawakami, Kazuhiko; and Sugiura, Noboru, 4,267,470, Cl. 307-515.000.

Sugiyama, Kazuo, to Dentan Co., Ltd. Theft prevention apparatus for vehicles. 4,267,547, Cl. 340-65.000.

Suling, Carlhans: *See—*
Konig, Klaus; Schreckenberg, Manfred; Lindner, Christian; Suling, Carlhans; and Freitag, Dieter, 4,267,303, Cl. 528-171.000.

Sullivan, Kevin J., to Corning Glass Works. Method of assuring the quality of the results obtained from a blood gas analyzer. 4,266,941, Cl. 23-230.00B.

Sumegi, Robert B.; Woodhouse, Geoffrey D.; Mattson, George B.; Jansen, Harvey B.; Bolliger, Frederic E.; and Hatch, Robert A., to Garrett Corporation, The. Gas turbine engine fuel control. 4,266,401, Cl. 60-39.16R.

Sumikawa, Seiji; Niizuma, Hiroshi; Tonegawa, Hiromichi; Torizuka, Tsuneo; Furuya, Yoichiro; and Takashima, Norio, to Diesel Kiki Co., Ltd. Heat exchanger with fluid tanks made of synthetic resin. 4,266,604, Cl. 165-176.000.

Sumitomo Heavy Industries, Ltd.: *See*—
Yamada, Yasuteru; and Kadota, Kenji, 4,266,967, Cl. 75-36.000.

Sumitomo Metal Industries, Ltd.: *See*—
Yamada, Yasuteru; and Kadota, Kenji, 4,266,967, Cl. 75-36.000.

Sun, Jui-Yuan: *See*—
Burk, Emmett H., Jr.; Yoo, Jin S.; Karch, John A.; and Sun, Jui-Yuan, 4,267,032, Cl. 208-113.000.

Sundeen, Joseph E.: *See*—
Hauck, Frederic P.; Cimarusti, Christopher M.; and Sundeen, Joseph E., 4,267,373, Cl. 564-428.000.

Sung, Rodney L., to Texaco Inc. Fuel compositions containing acyl glycine oxazolines. 4,266,944, Cl. 44-63.000.

Sunohara, Yoshio, to Nissan Motor Company, Limited. Look-up torque converter with compact arrangement of damper. 4,266,641, Cl. 192-3.280.

Surbrook, Louis M., to Offset Newspaper Equipment Inc. Lifting dollie. 4,266,903, Cl. 414-428.000.

Susor, William C.: *See*—
Nordstrom, Kjell H.; Dillon, Benny N.; and Susor, William C., 4,266,624, Cl. 177-253.000.

Suxov, Gennady I.: *See*—
Gaun, Viktor A.; Belousov, Anatoly V.; Petukhov, Vadim D.; Suxov, Gennady I.; Belyaev, Nikolai A.; Alyabiev, Vitaly K.; and Rassomakhin, Klimenty E., 4,266,465, Cl. 91-234.000.

Suzuki, Ikuo: *See*—
Asano, Hiroaki; Suzuki, Ikuo; and Enomoto, Minoru, 4,266,374, Cl. 51-165.870.

Suzuki, Keiji: *See*—
Imai, Ichiro; Hashimoto, Isao; Suzuki, Keiji; and Nakagawa, Hiroaki, 4,267,387, Cl. 568-568.000.

Suzuki, Koji; and Shibata, Takehiko, to Canon Kabushiki Kaisha. Surface potentiometer. 4,267,511, Cl. 324-458.000.

Suzuki, Masao, to Nippon Electric Co., Ltd. Memory test device with write and pseudo write signals. 4,267,583, Cl. 365-201.000.

Suzuki, Yasoji: *See*—
Iida, Tetsuya; Sato, Chikara; and Suzuki, Yasoji, 4,267,517, Cl. 330-253.000.

Suzuki, Yasuhiko: *See*—
Hasegawa, Junzo; Kawabata, Susumu; Niimi, Hiroshi; Suzuki, Yasuhiko; Akatsuka, Masaki; and Tsunekawa, Takahiko, 4,266,324, Cl. 19-239.000.

Suzuki, Yukio: *See*—
Uehara, Tsutomu; Oguchi, Toshihiko; Kubo, Tsutomu; Suzuki, Yukio; Nakagawa, Toshiharu; and Saito, Ichiyoshi, 4,266,503, Cl. 118-657.000.

Svendsen, Walter W.: *See*—
Anderson, Ronald B.; Svendsen, Walter W.; Beckley, Gary H.; and Caneer, Clifford, Jr., 4,266,444, Cl. 74-661.000.

Svenson, Hardy C., to United States of America, Treasury. Liquid or gas cooled flexible beam-compensating adjustable cylindrical mirror. 4,266,857, Cl. 350-295.000.

Svoboda, Josef, to TMC Corporation. Ski brake. 4,266,802, Cl. 280-605.000.

Swain, Jack W.; Thomerson, Clarence T.; and Waldrop, Tom C., to Regal Tool & Rubber Co., Inc. Drill pipe protector. 4,266,578, Cl. 138-110.000.

Swanson, Otto W. Shaped storage bag. 4,266,704, Cl. 224-42.46A.

Swartz, Henry D., to Standard Oil Company (Indiana). Corrugated plasticboard. 4,267,223, Cl. 428-172.000.

Swenson, Paul F. Fluid actuated damper control apparatus. 4,266,929, Cl. 431-20.000.

Swiss Aluminium Ltd.: *See*—
Festag, Werner; and Muller, Hans-Ueli, 4,266,416, Cl. 72-60.000.

Sykes, Richard B.: *See*—
Gregson, Michael; and Sykes, Richard B., 4,267,320, Cl. 544-22.000.

Syntex (U.S.A.) Inc.: *See*—
Gallop, Paul M.; and Korb, Donald R., 4,267,295, Cl. 526-264.000.

Synthelabo: *See*—
Najer, Henry; and Manoury, Philippe, 4,267,328, Cl. 544-394.000.

System Development Corporation: *See*—
Dechant, Thomas E.; Glaser, Edward L.; Pitt, Paul E.; and Way, Frederick, 4,267,568, Cl. 364-200.000.

Sytsma, Frederick R.: *See*—
Frost, Charles C.; Gurney, Gerald W.; and Sytsma, Frederick R., 4,266,657, Cl. 198-687.000.

Szeto, Leo H.: *See*—
Silfvast, William T.; Szeto, Leo H.; and Wood, Obert R., II, 4,267,525, Cl. 331-94.50G.

Tabar, Ronald J.: *See*—
Pett, Robert A.; Qaderi, S. Burhan A.; and Tabar, Ronald J., 4,267,086, Cl. 260-28.50R.

Tabata, Kazutaka, to Bambi Incorporated, The. Wrist watch band and manufacturing method therefor. 4,266,400, Cl. 59-35.00R.

Taga, Kazumitsu: *See*—
Koshida, Daikichi; Sugisawa, Ko; Matsumura, Yasushi; and Taga, Kazumitsu, 4,267,199, Cl. 426-589.000.

Taiheiyo Engineering Inc.: *See*—
Nakagima, Shigeo; Takahashi, Ken; and Endo, Hajime, 4,266,828, Cl. 299-53.000.

Takacs, Erzsebet: *See*—
Dobo, Janos; Takacs, Erzsebet; Hortobagyi, Gyozo; Skvorecz nee Hajnoczy, Marianne; Kolbe, Ilona; and Hoffmann nee Vas, Katalin, 4,267,138, Cl. 264-117.000.

Takada, Juichiro. Passive vehicle passenger restraint belt system. 4,266,811, Cl. 280-803.000.

Takagishi, Haruyoshi: *See*—
Shimatake, Hirokazu; Ogawa, Shuichi; Uchida, Shigeru; Nara, Ryuichi; and Takagishi, Haruyoshi, 4,267,424, Cl. 219-86.410.

Takahashi, Jun: *See*—
Sakai, Yoshihiro; and Takahashi, Jun, 4,266,418, Cl. 72-197.000.

Takahashi, Ken: *See*—
Nakagima, Shigeo; Takahashi, Ken; and Endo, Hajime, 4,266,828, Cl. 299-53.000.

Takahashi, Osamu: *See*—
Sakanoue, Seiki; Waki, Kokichi; Tsubota, Motohiko; Takahashi, Osamu; and Nakatsuka, Asao, 4,267,250, Cl. 430-214.000.

Takahashi, Yoshihiro: *See*—
Miura, Konoe; Eguchi, Chihiro; Takahashi, Yoshihiro; Oshima, Akinobu; Torige, Kazuo; and Bunya, Shinichi, 4,267,260, Cl. 430-302.000.

Takahashi, Yutaka: *See*—
Nawa, Motoyuki; Takahashi, Yutaka; and Sugawara, Norio, 4,266,722, Cl. 239-590.500.

Takano, Hiroshi, to Mitsuboshi Belting Ltd. Adjustless V-belt and method of manufacture. 4,266,937, Cl. 474-205.000.

Takashima, Norio: *See*—
Sumikawa, Seiji; Niizuma, Hiroshi; Tonegawa, Hiromichi; Torizuka, Tsuneo; Furuya, Yoichiro; and Takashima, Norio, 4,266,604, Cl. 165-176.000.

Takatani, Teruhika: *See*—
Mukai, Tadao; and Takatani, Teruhika, 4,266,816, Cl. 292-129.000.

Takazawa, Yuzuru: *See*—
Kitai, Kiyoshi; Nagaoka, Shinji; and Takazawa, Yuzuru, 4,267,440, Cl. 250-201.000.

Takeda Chemical Industries, Ltd.: *See*—
Nohara, Akira; Ishiguro, Toshihiro; and Ukawa, Kiyoshi, 4,267,332, Cl. 546-89.000.
Tsuji, Jiro, 4,267,376, Cl. 568-344.000.
Tsuji, Jiro, 4,267,377, Cl. 568-374.000.
Ueno, Hideo; and Miyosi, Juiti, 4,267,219, Cl. 428-90.000.

Takemae, Yoshihiro; and Nakano, Masao, to Fujitsu Fanuc Limited. Decoder circuit. 4,267,464, Cl. 307-463.000.

Takemoto, Iwao: *See*—
Ohba, Shinya; Takemoto, Iwao; Nakai, Masaaki; Ando, Haruhisa; and Kubo, Masaharu, 4,267,469, Cl. 307-311.000.

Takeuchi, Tomio: *See*—
Oki, Toshikazu; Yoshimoto, Akihiro; Inui, Taiji; Takeuchi, Tomio; and Umezawa, Hamao, 4,267,312, Cl. 536-17.00A.

Taki, Tsuneo: *See*—
Kanematsu, Tetsuo; and Taki, Tsuneo, 4,267,480, Cl. 310-366.000.

Takigawa, Hiroyoshi; Arimura, Iwao; Tanaka, Makoto; and Ohkuni, Shinichiro, to Bridgestone Tire Company Limited. Pneumatic tire for a heavy duty vehicle. 4,266,592, Cl. 152-209.00D.

Takita, Tomohisa: *See*—
Fujii, Akio; Fukuoka, Takeyo; Muraoka, Yasuhiko; Takita, Tomohisa; and Umezawa, Hamao, 4,267,102, Cl. 260-112.50R.

Tam, William A., to Chicago Bridge & Iron Company. Offshore column with mooring hawser system. 4,266,499, Cl. 114-230.000.

Tamborski, Christ; and Christian, John B., to United States of America, Air Force. Fluorine-containing benzimidazoles. 4,267,348, Cl. 548-330.000.

Tanaka, Hiroaki; and Tsunawaki, Kiyokazu, to Teijin Limited. Electrically conductive fiber and method for producing the same. 4,267,233, Cl. 428-389.000.

Tanaka, Makoto: *See*—
Takigawa, Hiroyoshi; Arimura, Iwao; Tanaka, Makoto; and Ohkuni, Shinichiro, 4,266,592, Cl. 152-209.00D.

Tani, Keizo: *See*—
Muramoto, Ken-ichi; Tani, Keizo; Tomisawa, Yutaka; and Hideshima, Makoto, 4,267,557, Cl. 357-20.000.

Taniguchi, Hiroyuki: *See*—
Momma, Naohiro; and Taniguchi, Hiroyuki, 4,266,990, Cl. 148-189.000.

Tanimoto, Akikazu: *See*—
Nakazawa, Kiwao; and Tanimoto, Akikazu, 4,266,876, Cl. 356-400.000.

Taniwaki, Genshi, to Kongo Co., Ltd. Sliding door. 4,266,372, Cl. 49-358.000.

Taniyama, Kiyoshi: *See*—
Hayashi, Shinjiro; Taniyama, Kiyoshi; Kikuchi, Kenichi; and Akashi, Teruo, 4,266,439, Cl. 74-501.00R.

Tanski, William J., to Sperry Corporation. Surface acoustic wave reflectors with weighted arrays of segmented and non-segmented lineal elements. 4,267,534, Cl. 333-153.000.

Tatsumi, Susumu: *See*—
Eda, Tadahiro; Tatsumi, Susumu; and Imai, Chikara, 4,266,870, Cl. 355-14.00D.

Tausch, Walter: *See*—
Bruckner, Elmar; Gausmann, Hans; Schipper, Philipp; and Tausch, Walter, 4,267,149, Cl. 422-65.000.

Taylor, Aaron S., to Mobil Tyco Solar Energy Corporation. Gravity dampened guidance system. 4,267,153, Cl. 422-249.000.

Taylor, Clyde L. Sesame seed harvester. 4,266,393, Cl. 56-14.600.
Taylor, John D. Pull station protector. 4,267,549, Cl. 340-302.000.
Teague, Richard K.; and Yu, Henry H. S., to Envirotech Corporation. Fiber-rejecting corona discharge electrode and a filtering system employing the discharge electrode. 4,266,948, Cl. 55-126.000.
Technion Research & Development Foundation Ltd.: *See*—
Rom, Josef; Alterman, Israel; and Shwartz, Josef, 4,266,609, Cl. 166-251.000.
Tedeschi, Enzo, to Plantex Ltd. Imidazo(2,1-B)thiazoles. 4,267,339, Cl. 548-154.000.
Teijin Limited: *See*—
Tanaka, Hiroaki; and Tsunawaki, Kiyokazu, 4,267,233, Cl. 428-389.000.
Tektronix, Inc.: *See*—
Traa, Einar O., 4,267,516, Cl. 330-149.000.
Tel-Thermco Engineering Co., Ltd.: *See*—
Satoh, Ryozo, 4,266,507, Cl. 118-733.000.
Teleco Oilfield Services Inc.: *See*—
Stone, Frederick A., 4,266,606, Cl. 166-113.000.
Teleplastics Industries S.A.: *See*—
Speitel, Francois; and Speitel, Robert, 4,266,682, Cl. 215-331.000.
Telford, Thomas M., to Warn Industries, Inc. Wheel stud mounted locking clutch. 4,266,646, Cl. 192-67.00R.
Tella, Richard P.: *See*—
Birk, John R.; Kelley, Robert B.; and Tella, Richard P., 4,266,905, Cl. 414-627.000.
Tellman, Stephen J., to Champion International Corporation. Hardboard panel siding. 4,266,382, Cl. 52-316.000.
Teraji, Tsutomu: *See*—
Kamiya, Takashi; Teraji, Tsutomu; Nakai, Yoshiharu; Sakane, Kazuo; and Goto, Jiro, 4,267,176, Cl. 424-246.000.
Kamiya, Takashi; Saito, Yoshihisa; Teraji, Tsutomu; Nakaguti, Osamu; and Oku, Teruo, 4,267,340, Cl. 548-187.000.
Terui, Nobuo; and Kobayashi, Kozo, to Nakamichi Research Inc. Distortion factor meter circuit. 4,267,515, Cl. 328-147.000.
Terzian, Rouben T.: *See*—
Kuna, Wayne A.; Katzman, Allison W.; and Terzian, Rouben T., 4,266,367, Cl. 46-149.000.
Tetekawa, Takaiki: *See*—
Naito, Kazuaki; Tetekawa, Takaiki; Sogo, Shigeyuki; Higaki, Kazuhiko; Yasuoka, Tetu; and Hosoi, Hidetoshi, 4,266,885, Cl. 405-109.000.
Tetra Pak Developpement SA: *See*—
Rausing, Anders R., 4,266,698, Cl. 222-528.000.
Tetra Pak International AB: *See*—
Linde, Bjorn H.; and Reil, Wilhelm, 4,266,389, Cl. 53-396.000.
Olsen, Jan-Erik, 4,266,993, Cl. 156-69.000.
Texaco Development Corp.: *See*—
Cuscurida, Michael; and Speranza, George P., 4,267,120, Cl. 260-463.000.
Texaco Inc.: *See*—
Bousaid, Issam S.; and Ho, Benny K-C, 4,266,611, Cl. 166-273.000.
Sung, Rodney L., 4,266,944, Cl. 44-63.000.
Texas Instruments Incorporated: *See*—
Guterman, Daniel C., 4,267,558, Cl. 357-41.000.
Vetter, Edward O., 4,267,578, Cl. 364-709.000.
Volpi, John P.; and Kyle, Robert R., 4,267,597, Cl. 455-76.000.
Textima, VEB Wirkmaschinenbau-Karl-Marx Stadt: *See*—
Schneider, Manfred; Kahmann, Gottfried; Gohler, Wolfgang; and Kircheiss, Andreas, 4,266,410, Cl. 66-84.00R.
Th. Goldschmidt AG: *See*—
Lidy, Werner; Rossmy, Gerd; and Kollmeier, Hans-Joachim, 4,267,078, Cl. 260-2.300.
Thacker Container Company: *See*—
Garrison, Earl G., 4,266,715, Cl. 229-37.00E.
Thackeray, Michael M.: *See*—
Coetzer, Johan; and Thackeray, Michael M., 4,267,242, Cl. 429-104.000.
Thankachan, Chacko; Ritchie, John G.; Sahayada, Eugene; and Sengupta, Asok, to J.G.L. Chemicals Ltd. Vapor permeation curable coatings based on alkyd resins. 4,267,239, Cl. 428-425.100.
Thermodynamics Corporation: *See*—
Lux, Robert J., Jr., 4,267,399, Cl. 174-1.000.
Theurer, Josef; and Oellerer, Friedrich, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Self-propelled ballast cleaning machine. 4,266,615, Cl. 171-16.000.
Thiene, Paul G., to SMR Corporation. Binary switching control circuit for an electrically adjustable patient chair. 4,267,490, Cl. 318-51.000.
Thil, Lucien; Fischer, Martin; and Kindscher, Wolfgang, to BASF Aktiengesellschaft. Aminosulfonylcarboxylic acids and their substituted ammonium salts. 4,267,122, Cl. 260-501.120.
Thillays, Jacques C., to U.S. Philips Corporation. Device for displaying alphanumerical characters. 4,267,486, Cl. 313-500.000.
Thomanek, Gerd, to Siemens Aktiengesellschaft. Circuit arrangement for storing a text. 4,267,582, Cl. 364-900.000.
Thomas & Betts Corporation: *See*—
Grundfest, Michael A., 4,266,419, Cl. 72-410.000.
Thomas, Paul A.: *See*—
Holmsen, Theodore W.; Kurihara, Norman H.; and Thomas, Paul A., 4,266,964, Cl. 71-94.000.
Thomas, Robert J.; and Piekarski, Michael, to Key Tronic Corporation. Document reader lamp life extension system. 4,267,439, Cl. 235-454.000.
Thomas, Rudolf: *See*—
Stetter, Jorg; Draber, Wilfried; Thomas, Rudolf; and Lunkenheimer, Winfried, 4,267,338, Cl. 548-143.000.
Thomas, Rudy V.; and Stephenson, Robert L., to Allied Chemical Corporation. Passive seat belt system with guide clip. 4,266,810, Cl. 280-802.000.
Thomerson, Clarence T.: *See*—
Swain, Jack W.; Thomerson, Clarence T.; and Waldrop, Tom C., 4,266,578, Cl. 138-110.000.
Thompson, Worthington J. Controlled natural purification system for advanced wastewater treatment and protein conversion and recovery. 4,267,038, Cl. 210-602.000.
Thomsen, Svend E.: *See*—
Baatrup, Johannes V.; Christensen, Thorkild; Christiansen, Tage; and Thomsen, Svend E., 4,266,464, Cl. 91-29.000.
Thomson-CSF: *See*—
Derewonko, Henri; Laviron, Michel; and Lepage, Joel, 4,267,520, Cl. 330-286.000.
Thomson, Ian M., to Cable Belt, Ltd. Improvements in and relating to ropes. 4,266,396, Cl. 57-221.000.
Thornberry, Gerald E., to RCA Corporation. Radio frequency interference suppression apparatus. 4,267,528, Cl. 333-12.000.
Thouvenin, Maurice: *See*—
Grassin, Jerome; Thouvenin, Maurice; and Epie, Jean-Claude, 4,266,331, Cl. 29-449.000.
Tiers, George V. D.: *See*—
Beck, Boyd R.; Sher, Frank T.; and Tiers, George V. D., 4,267,213, Cl. 427-292.000.
Tikico Ltd.: *See*—
Uemura, Tamio; and Kodama, Yoshiki, 4,266,790, Cl. 280-6.100.
Tilley, Janet P.: *See*—
Knight, Peter A.; and Tilley, Janet P., 4,267,229, Cl. 428-324.000.
Tilling, Basil B., to Parker-Hannifin Corporation. Vent valve. 4,266,574, Cl. 137-630.190.
Tingey, Albert R.: *See*—
Williams, Malcolm; Tingey, Albert R.; Southgate, John P.; and Russell, Steven J., 4,266,522, Cl. 123-492.000.
TMC Corporation: *See*—
Himmetsberger, Alois, 4,266,803, Cl. 280-605.000.
Svoboda, Josef, 4,266,802, Cl. 280-605.000.
Weigl, Erwin; and Stritzl, Karl, 4,266,806, Cl. 280-618.000.
Toa Nenryo Kogyo Kabushiki Kaisha: *See*—
Hirabayashi, Hideo; Yamaguchi, Hiroshi; and Uemura, Masahiko, 4,267,031, Cl. 208-106.000.
Toda, Kashiku; Honda, Moriji; and Mishina, Haruhiko, to Mitsubishi Jukogyo Kabushiki Kaisha. Marine steering arrangement. 4,266,497, Cl. 114-144.00R.
Togashi, Seigo, to Citizen Watch Co., Ltd. Liquid crystal display device. 4,266,859, Cl. 350-338.000.
Tokas, Edward F., to Monsanto Company. Minimizing feed problems and reducing residual acrylonitrile monomer in processing nitrile polymers. 4,267,282, Cl. 525-86.000.
Toko Yakuhin Kogyo Kabushiki Kaisha: *See*—
Kamishita, Takuzo; and Kamishita, Kazuhiko, 4,267,169, Cl. 424-78.000.
Tokuno, Masateru, to Rengo Co., Ltd. Method for producing double-faced corrugated boards. 4,266,998, Cl. 156-159.000.
Tokura, Yasufumi: *See*—
Nishimura, Hideo; Tokura, Yasufumi; Unno, Kunihiko; Enomoto, Minoru; Yokoe, Isamu; Shimizu, Norihiko; and Ohmura, Haruo, 4,266,375, Cl. 51-165.710.
Tokuyama Soda Kabushiki Kaisha: *See*—
Mizutani, Yukio; Mitani, Katsuo; and Maehara, Takashi, 4,267,084, Cl. 260-23.0XA.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Hidai, Yutaka; and Okuda, Nobuo, 4,267,456, Cl. 250-492.00A.
Iida, Tetsuya; Sato, Chikara; and Suzuki, Yasoji, 4,267,517, Cl. 330-253.000.
Kobayashi, Ichiro; Moriya, Yoshiaki; and Kitagawa, Yukio, 4,267,581, Cl. 364-900.000.
Matsumoto, Shoichi; Kato, Hirohisa; and Wada, Yusuke, 4,266,335, Cl. 29-592.00R.
Muramoto, Ken-ichi; Tani, Keizo; Tomisawa, Yutaka; and Hideshima, Makoto, 4,267,557, Cl. 357-20.000.
Shibata, Tadashi; and Iizuka, Hisakazu, 4,267,011, Cl. 156-628.000.
Uehara, Tsutomu; Oguchi, Toshihiko; Kubo, Tsutomu; Suzuki, Yukio; Nakagawa, Toshiharu; and Saito, Ichiyoshi, 4,266,503, Cl. 118-657.000.
Yamaguchi, Tetsuo, 4,267,589, Cl. 368-109.000.
Tokyo Shibaura Kenki Kabushiki Kaisha: *See*—
Kurosawa, Ryoichi, 4,267,499, Cl. 318-800.000.
Tokyo Yogyo Kabushiki Kaisha: *See*—
Iwaoka, Shoji; Kaito, Hiroyuki; Anzai, Shigeo; Ushigome, Susumu; Watanabe, Yoshiaki; and Mimura, Nobuyuki, 4,266,970, Cl. 75-59.000.
Tolotti, Gregory. Fireplace heater. 4,266,526, Cl. 126-123.000.
Tolstopyatov, Konstantin S.: *See*—
Birjukov, Mikhail N.; Maslov, Gennady N.; Smorodinnikov, Vladimir P.; Kulikov, Anatoly P.; Udilova, Ida G.; Zuev, Vladimir K.; Lukyanov, Anatoly A.; Tolstopyatov, Konstantin S.; Kalinichev, Alexandr E.; and Zhabin, Ivan Y., 4,266,922, Cl. 425-182.000.
Tomalia, Donald A.; and Buchholz, Fredric L., to Dow Chemical Company, The. Imidazolinium compounds. 4,267,350, Cl. 548-354.000.
Tomisawa, Yutaka: *See*—
Muramoto, Ken-ichi; Tani, Keizo; Tomisawa, Yutaka; and Hideshima, Makoto, 4,267,557, Cl. 357-20.000.

Tomita, Yoshifumi; Nishizawa, Masahiro; and Fujimura, Takashi, to Hitachi, Ltd. Method of manufacturing striped phosphor screen for black matrix type color picture tube. 4,267,204, Cl. 427-68.000.

Tomy Kogyo Co., Inc.: *See—*
Ikeda, Masaki, 4,266,777, Cl. 273-310.000.
Spring, Gorden W., 4,266,767, Cl. 273-1.00R.

Tonegawa, Hiromichi: *See—*
Sumikawa, Seiji; Niizuma, Hiroshi; Tonegawa, Hiromichi; Torizuka, Tsuneo; Furuya, Yoichiro; and Takashima, Norio, 4,266,604, Cl. 165-176.000.

Tong, Yit C.: *See—*
Forster, Ian C.; Patrick, James F.; Tong, Yit C.; Black, Raymond C.; and Clark, Graeme M., 4,267,410, Cl. 179-107.0BC.

Tonomura, Yoshinobu: *See—*
Hanyu, Susumu; and Tonomura, Yoshinobu, 4,266,493, Cl. 112-158.00E.

Torau, Gunther W.: *See—*
Gilbert, Robert W.; and Torau, Gunther W., 4,266,927, Cl. 425-526.000.

Toray Silicone Company, Ltd.: *See—*
Hanada, Tsuneo; and Mikami, Ryuzo, 4,267,297, Cl. 528-18.000.

Torck, Bernard; Van Landeghem, Hugo; Vu, Quang D.; and Hellin, Michel, to Institut Francais du Petrole. Process for producing ethers by reacting olefins with alcohols. 4,267,393, Cl. 568-697.000.

Torige, Kazuo: *See—*
Miura, Konoe; Eguchi, Chihiro; Takahashi, Yoshihiro; Oshima, Akinobu; Torige, Kazuo; and Bunya, Shinichi, 4,267,260, Cl. 430-302.000.

Torizuka, Tsuneo: *See—*
Sumikawa, Seiji; Niizuma, Hiroshi; Tonegawa, Hiromichi; Torizuka, Tsuneo; Furuya, Yoichiro; and Takashima, Norio, 4,266,604, Cl. 165-176.000.

Torloting, Jean-Claude, to Rhone-Poulenc Industries. Heat-stabilized vinyl chloride polymers. 4,267,083, Cl. 260-23.0XA.

Tornier, Alain, to Etablissements Tornier. Femoral pin for hip prosthesis. 4,266,302, Cl. 3-1.912.

Torok, Vilmos, to ASEA Aktiebolag. Drive equipment with two-phase synchronous motor. 4,267,498, Cl. 318-723.000.

Torrington, Leslie A., to RCA Corporation. Video disc caddy having disc entrapment. 4,266,784, Cl. 369-77.000.

Tournier, Herve: *See—*
Sachetto, Jean-Pierre; Regnault, Alain; Cuccolo, Sergio; Tournier, Herve; and Armanet, Jean-Michel, 4,267,314, Cl. 536-53.000.

Tournut, Claude: *See—*
Duperray, Gilbert; Monnet, Andre A.; and Tournut, Claude, 4,267,237, Cl. 428-422.000.

Towmotor Corporation: *See—*
Wiblin, Wayne T., 4,267,544, Cl. 338-32.00H.

Toyo Kogyo Co., Ltd.: *See—*
Mukai, Tadao; and Takatani, Teruhika, 4,266,816, Cl. 292-129.000.

Toyoda-Koki Kabushiki-Kaisha: *See—*
Asano, Hiroaki; Suzuki, Ikuo; and Enomoto, Minoru, 4,266,374, Cl. 51-165.870.
Kikuchi, Makoto; and Ohtsu, Ikuo, 4,266,377, Cl. 51-262.00T.
Nishimura, Hideo; Tokura, Yasufumi; Unno, Kunihiko; Enomoto, Minoru; Yokoe, Isamu; Shimizu, Norihiko; and Ohmura, Haruo, 4,266,375, Cl. 51-165.710.

Toyomoto, Kazuo: *See—*
Hashino, Yasuo; Hayano, Fusakazu; and Toyomoto, Kazuo, 4,267,053, Cl. 210-650.000.

Toyoshima, Shigeshi; Sato, Ryuichi; Ito, Koichi; Shinohara, Toshio; and Arai, Masatoshi, to Shin-Etsu Chemical Co. Ltd. Bis(triorganosilylalkyl) phosphites. 4,267,172, Cl. 424-184.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Hayashi, Shinjiro; Taniyama, Kiyoshi; Kikuchi, Kenichi; and Akashi, Teruo, 4,266,439, Cl. 74-501.00R.
Kobayashi, Tatuo; and Yamada, Nobuo, 4,267,128, Cl. 261-44.00C.
Nakano, Jiro; and Miyagi, Hideo, 4,266,521, Cl. 123-491.000.

Traa, Einar O., to Tektronix, Inc. Common-emitter f_T doubler amplifier employing a feed forward amplifier to reduce non-linearities and thermal distortion. 4,267,516, Cl. 330-149.000.

Tranberg, Erik R.; and Widen, Bo G., to GKN-Stenman AB. Method of manufacturing a lock cylinder follower. 4,266,711, Cl. 228-135.000.

Trane Company, The: *See—*
Saunders, James F.; and Krocker, Robert E., 4,266,599, Cl. 165-2.000.

Transidyne General Corporation: *See—*
Vanden Broek, Jan A., 4,267,574, Cl. 364-520.000.

Trask, Allen. Heat pump refrigerant circuit. 4,266,405, Cl. 62-160.000.

Traulsen, Heinrich: *See—*
Schwartz, Werner; Fischer, Peter; and Traulsen, Heinrich, 4,266,971, Cl. 75-69.000.

Treadwell, William H. Golf ball. 4,266,773, Cl. 273-232.000.

Trekoval, Jiri: *See—*
Sevcik, Stanislav; Trekoval, Jiri; Holata, Jan; and Stamberg, Jiri, 4,267,287, Cl. 525-271.000.

Tremix AB: *See—*
Wenander, Harald S., 4,266,581, Cl. 141-65.000.

Tresper, Erhard: *See—*
Selbeck, Harald; Wulff, Claus; Hucks, Uwe; Tresper, Erhard; and Vernaleken, Hugo, 4,267,127, Cl. 260-973.000.

Trico Products Corporation: *See—*
Riester, William C.; and Papadatos, Dionysios D., 4,266,883, Cl. 403-134.000.

Trio Kabushiki Kaisha: *See—*
Matsuzawa, Mitsuo; and Yashita, Hajime, 4,267,605, Cl. 455-266.000.

Trisops, Inc.: *See—*
Wells, Daniel R., 4,267,488, Cl. 315-111.700.

Troger, Johannes; Lauter, Gernot; and Sporl, Heinrich, to Forschungsinstitut fur Holztechnologie. Positioner for rotary tool. 4,266,893, Cl. 409-206.000.

Trotscher, Otto; and Wiedmann, Erwin, to Carl Zeiss-Stiftung. Refractometer for the automatic objective determination of the refractive condition of an eye. 4,266,862, Cl. 351-14.000.

True Temper Corporation: *See—*
Sivon, Robert L., 4,266,718, Cl. 238-9.000.

Trueblood, Troy M.; and Moulton, Robert H., to Hersh, John R.; and Allen, Russell E. Process for producing food grade soybean oil. 4,267,118, Cl. 260-428.000.

Truth Incorporated: *See—*
Erdman, Arthur G.; and Peterson, Jeffory A., 4,266,371, Cl. 49-252.000.

TRW Inc.: *See—*
Mesch, Hans G.; Debenham, Colin H.; and Yasui, Robert K., 4,267,003, Cl. 156-356.000.

Tsao, George T.; and Chou, Terry Y., to Purdue Research Corporation. Process for recovering and utilizing cellulose using sulfuric acid. 4,266,981, Cl. 127-37.000.

Tsao, Hsiang-Wei, to Union Carbide Agricultural Products Company, Inc. Preparation of 2-trifluoromethyl cinchoninic acids. 4,267,333, Cl. 546-170.000.

Tschopp, Anton F.: *See—*
Hildreth, John D.; Tschopp, Anton F.; and Evans, David G., 4,266,939, Cl. 8-437.000.

Tsubota, Motohiko: *See—*
Sakanoue, Seiki; Waki, Kokichi; Tsubota, Motohiko; Takahashi, Osamu; and Nakatsuka, Asao, 4,267,250, Cl. 430-214.000.

Tsuchiya, Yoshikazu: *See—*
Sato, Makoto; Ohmori, Taiji; and Tsuchiya, Yoshikazu, 4,266,833, Cl. 303-106.000.

Tsuji, Hisao: *See—*
Kitazawa, Yoichi; Sato, Takeshi; and Tsuji, Hisao, 4,266,995, Cl. 156-123.00R.

Tsuji, Jiro, to Takeda Chemical Industries, Ltd. Steroid synthesis. 4,267,376, Cl. 568-344.000.

Tsuji, Jiro, to Takeda Chemical Industries, Ltd. Intermediates for steroid synthesis. 4,267,377, Cl. 568-374.000.

Tsukada, Keizo, to Sony Corporation. Timer circuit. 4,267,467, Cl. 307-597.000.

Tsunawaki, Kiyokazu: *See—*
Tanaka, Hiroaki; and Tsunawaki, Kiyokazu, 4,267,233, Cl. 428-389.000.

Tsunekawa, Takahiko: *See—*
Hasegawa, Junzo; Kawabata, Susumu; Niimi, Hiroshi; Suzuki, Yasuhiko; Akatsuka, Masaki; and Tsunekawa, Takahiko, 4,266,324, Cl. 19-239.000.

Tsunemi, Masaaki: *See—*
Sasaki, Umekichi; Tsunemi, Masaaki; Yamada, Kaichi; and Morikawa, Yoshiyuki, 4,267,064, Cl. 252-52.00A.

Tsuzuki, Hanzou: *See—*
Mizuno, Mamoru; and Tsuzuki, Hanzou, 4,267,587, Cl. 368-85.000.

Tudisco, Vincent J., to White Development Corporation. Flexible handle for percussive tool with improved vertebra member. 4,266,588, Cl. 145-61.00D.

Tummoscheit, Peter: *See—*
Convertini, Ursula; Dimingen, Heinz; Luthje, Holger; Kuch, Friedrich; and Tummoscheit, Peter, 4,267,510, Cl. 324-249.000.

Tuneblom, Eskil, to Dynapac Maskin AB. Resiliently mounted steering yoke for road roller. 4,266,884, Cl. 404-122.000.

Turek, Klaus. Apparatus operating with an adsorbent substance for purifying air. 4,266,952, Cl. 55-179.000.

Turk, Chester F.: *See—*
Krapcho, John; and Turk, Chester F., 4,267,354, Cl. 560-39.000.

Tymkewicz, John: *See—*
Knupp, Mary R.; and Tymkewicz, John, 4,266,501, Cl. 118-15.000.

Tyner, Alfred E., to Brunswick Corporation. Intake manifold system for a two-cycle V-engine. 4,266,514, Cl. 123-55.00R.

Tyrone Hydraulics Inc.: *See—*
McBurnett, James R.; and Eley, James M., 4,266,915, Cl. 418-126.000.

UBE Industries, Ltd.: *See—*
Umemura, Sumio; Ohdan, Kyoji; and Asada, Hiroyuki, 4,267,385, Cl. 568-479.000.

Uchida, Shigeru: *See—*
Shimatake, Hirokazu; Ogawa, Shuichi; Uchida, Shigeru; Nara, Ryuichi; and Takagishi, Haruyoshi, 4,267,424, Cl. 219-86.410.

Uchino, Misao; and Watanabe, Minoru, to Citizen Watch Co., Ltd. Electrophonic musical instrument. 4,267,586, Cl. 368-73.000.

Uchiyama, Hiroshi, to E.C. Chemical Ind. Co., Ltd.; and C. Itoh & Co., Ltd. Process for preparing dibenzylidenesorbitol and composition containing the same. 4,267,110, Cl. 260-340.700.

Udilova, Ida G.: *See—*
Birjukov, Mikhail N.; Maslov, Gennady N.; Smorodinnikov, Vladimir P.; Kulikov, Anatoly P.; Udilova, Ida G.; Zuev, Vladimir K.; Lukyanov, Anatoly A.; Tolstopyatov, Konstantin S.; Kalinichev, Alexandr E.; and Zhabin, Ivan Y., 4,266,922, Cl. 425-182.000.

Uebele, Curtis E.: *See—*
Benton, Kenneth C.; White, James F.; Uebele, Curtis E.; and Weinert, Raymond J., Jr., 4,267,292, Cl. 526-79.000.

Ueda, Tomoyuki: *See*—
Ninomiya, Youichi; Ogawa, Hirotoshi; Ueda, Tomoyuki; and Machida, Masataka, 4,266,754, Cl. 251-306.000.
Uehara, Tsutomu; Oguchi, Toshihiko; Kubo, Tsutomu; Suzuki, Yukio; Nakagawa, Toshiharu; and Saito, Ichiyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for forming a cloud of toner particles. 4,266,503, Cl. 118-657.000.
Ueki, Kazuyoshi: *See*—
Iida, Shinya; Ueki, Kazuyoshi; Komatsu, Hideo; and Mitzutani, Tatsumi, 4,267,013, Cl. 156-643.000.
Uemura, Masahiko: *See*—
Hirabayashi, Hideo; Yamaguchi, Hiroshi; and Uemura, Masahiko, 4,267,031, Cl. 208-106.000.
Uemura, Tamio; and Kodama, Yoshiki, to Tikico Ltd. Vehicle height adjusting apparatus. 4,266,790, Cl. 280-6.100.
Ueno, Hideo; and Miyosi, Juiti, to Takeda Chemical Industries, Ltd. Flocked laminates having adhesive containing hot-melt polymer particles. 4,267,219, Cl. 428-90.000.
Uhlmann, Georg, to Rheintechnik Weiland & Kaspar KG. Method and apparatus for aerating water. 4,267,051, Cl. 210-619.000.
Ukawa, Kiyoshi: *See*—
Nohara, Akira; Ishiguro, Toshihiro; and Ukawa, Kiyoshi, 4,267,332, Cl. 546-89.000.
Ullinger, Richard L. Overspeed device test disconnect device. 4,266,422, Cl. 73-2.000.
Ulrich, Roland: *See*—
Merz, Karlheinz; and Ulrich, Roland, 4,267,037, Cl. 209-481.000.
Umeda, Kaoru; and Harada, Hideo, to Sony Corporation. Tuning control apparatus for a frequency synthesizer tuner. 4,267,601, Cl. 455-165.000.
Umemura, Sumio; Ohdan, Kyoji; and Asada, Hiroyuki, to UBE Industries, Ltd. Process for the catalytic preparation of acrolein and methacrolein. 4,267,385, Cl. 568-479.000.
Umezawa, Hamao: *See*—
Fujii, Akio; Fukuoka, Takeyo; Muraoka, Yasuhiko; Takita, Tomohisa; and Umezawa, Hamao, 4,267,102, Cl. 260-112.50R.
Oki, Toshikazu; Yoshimoto, Akihiro; Inui, Taiji; Takeuchi, Tomio; and Umezawa, Hamao, 4,267,312, Cl. 536-17.00A.
Unetich, Robert M.; and Shibler, William, to RCA Corporation. Regulated filament supply for high-power tubes. 4,267,487, Cl. 315-107.000.
Union Carbide Agricultural Products Company, Inc.: *See*—
Tsao, Hsiang-Wei, 4,267,333, Cl. 546-170.000.
Union Carbide Corporation: *See*—
Conway, Richard A.; and Nelson, Robert F., 4,267,050, Cl. 210-608.000.
Goeke, George L.; and Karol, Frederick J., 4,267,309, Cl. 528-413.000.
Kurtz, Stuart J.; Blakeslee, Theodore R., III; and Scarola, Leonard S., 4,267,146, Cl. 264-564.000.
Louzos, Demetrios V., 4,267,244, Cl. 429-213.000.
Uniroyal GmbH: *See*—
Schmohl, Michael W., 4,266,349, Cl. 36-32.00R.
Uniroyal, Inc.: *See*—
Martin, Frank S.; Melvin, Terence; and Pieroni, Joseph K., 4,266,772, Cl. 273-218.000.
Unit Rig & Equipment Co.: *See*—
Walker, John A., 4,266,420, Cl. 72-416.000.
United Electric Controls Company: *See*—
Reis, Robert D., 4,267,413, Cl. 200-81.400.
United Kingdom Atomic Energy Authority: *See*—
Hackney, Stanley, 4,266,955, Cl. 55-412.000.
United Merchants and Manufacturers, Inc.: *See*—
Gregorian, Razmic S.; and Namboodri, Chettoor G., 4,266,976, Cl. 106-2.000.
U.S. Clinical Products, Inc.: *See*—
Cummings, Robert, 4,266,687, Cl. 220-257.000.
United States Gypsum Company: *See*—
Orals, David L.; and Laffoon, James D., 4,266,384, Cl. 52-410.000.
United States of America
Administrator, National Aeronautics and Space Administration: *See*—
Ludwig, Lawrence P., 4,266,788, Cl. 277-193.000.
Agriculture: *See*—
Barwise, Robert D.; Sturos, John A.; and Brumm, Douglas B., 4,266,675, Cl. 209-540.000.
Air Force: *See*—
Brown, Donald G., 4,267,523, Cl. 331-94.50C.
Canda, William R., 4,266,301, Cl. 2-410.000.
Driscoll, Michael M.; and Lisle, Thomas K., Jr., 4,267,513, Cl. 328-60.000.
Kimsey, Thomas H., 4,267,514, Cl. 328-133.000.
McDermott, William E.; Benard, David J.; Pchelkin, Nicholas R.; and Bousek, Ronald R., 4,267,526, Cl. 331-94.50G.
O'Loughlin, James P., 4,267,484, Cl. 313-325.000.
Perez, David J.; and Schwartz, Kenneth P., 4,266,742, Cl. 244-63.000.
Tamborski, Christ; and Christian, John B., 4,267,348, Cl. 548-330.000.
Army: *See*—
F'Geppert, Erwin, 4,266,591, Cl. 411-167.000.
Hacskaylo, John J.; and Hacskaylo, Michael, 4,266,873, Cl. 356-251.000.
Holaday, John W.; and Faden, Alan I., 4,267,182, Cl. 424-260.000.
Matthys, Bernard A.; Schoen, Donald W.; and Anderson, Carl E., 4,266,953, Cl. 55-294.000.
Raimondi, Peter K., 4,267,562, Cl. 358-109.000.
Energy: *See*—
Higgins, Robert W.; and Robichaud, Roger E., 4,266,852, Cl. 350-96.200.
Miller, John R., 4,266,506, Cl. 118-725.000.
Interior: *See*—
Divers, Edward F., 4,266,829, Cl. 299-64.000.
Retka, Thomas J.; and Schoen, Donald W., 4,266,830, Cl. 299-87.000.
National Aeronautics and Space Administration: *See*—
Brunson, John W., 4,267,594, Cl. 371-20.000.
Kelley, Wendell W., 4,266,743, Cl. 244-182.000.
Navy: *See*—
Bond, James W.; Alsup, James M.; Speiser, Jeffrey M.; Whitehouse, Harper J.; and Lagnado, Isaac, 4,267,580, Cl. 364-824.000.
Burns, William K., 4,266,850, Cl. 350-96.140.
Campbell, Kenneth J., 4,267,600, Cl. 455-115.000.
Davey, John E.; Christou, Aristos; and Dietrich, Harry B., 4,267,014, Cl. 156-662.000.
Henderson, Larry D.; and Johnson, Craig E., 4,267,132, Cl. 264-3.00B.
Jenkins, Jack L., 4,266,601, Cl. 165-94.000.
Rail, Robert D.; and Haynes, Harvey H., 4,266,889, Cl. 405-223.000.
Treasury: *See*—
Svenson, Hardy C., 4,266,857, Cl. 350-295.000.
U.S. Philips Corporation: *See*—
Bergveld, Piet, 4,267,504, Cl. 324-62.000.
Claassens, Antonius P. J. A., 4,266,341, Cl. 30-195.000.
Convertini, Ursula; Dimingen, Heinz; Luthje, Holger; Kuch, Friedrich; and Tummoscheit, Peter, 4,267,510, Cl. 324-249.000.
Kieboom, Arnoldus M. C.; and Dedding, Nicolaas P., 4,267,453, Cl. 250-368.000.
Rosier, Jean-Claude, 4,267,442, Cl. 250-207.000.
Schoofs, Franciscus A. C. M., 4,267,408, Cl. 179-77.000.
Thillays, Jacques C., 4,267,486, Cl. 313-500.000.
U.S. Terrazzo Panels, Inc.: *See*—
Murray, John A., 4,266,921, Cl. 425-158.000.
United Technologies Corporation: *See*—
Smith, J. Harold, 4,267,137, Cl. 264-113.000.
University of California, The Regents of the: *See*—
Bergstrom, Donald E.; and Ruth, Jerry L., 4,267,171, Cl. 424-180.000.
University of Delaware: *See*—
Ih, Charles S., 4,266,846, Cl. 350-3.710.
Rothwarf, Allen, 4,267,398, Cl. 136-256.000.
University of Kentucky Research Foundation, The: *See*—
DeLuca, Patrick P.; and Butler, L. David, 4,267,449, Cl. 250-303.000.
University of Melbourne, The: *See*—
Forster, Ian C.; Patrick, James F.; Tong, Yit C.; Black, Raymond C.; and Clark, Graeme M., 4,267,410, Cl. 179-107.0BC.
University of Texas: *See*—
Boudreau, James C.; and White, Thomas D., 4,267,195, Cl. 426-2.000.
Unkelbach, Karl-Heinz: *See*—
Bender, Hans; Graf, Rupprecht; Unkelbach, Karl-Heinz; and Zabel, Wolf, 4,266,982, Cl. 134-18.000.
Unno, Kunihiko: *See*—
Nishimura, Hideo; Tokura, Yasufumi; Unno, Kunihiko; Enomoto, Minoru; Yokoe, Isamu; Shimizu, Norihiko; and Ohmura, Haruo, 4,266,375, Cl. 51-165.710.
UOP Inc.: *See*—
Schmidt, Robert J.; and Imai, Tamotsu, 4,267,397, Cl. 568-899.000.
Upjohn Company, The: *See*—
Bundy, Gordon L., 4,267,315, Cl. 542-400.000.
Kolakowski, Richard A.; and Knis, Stephen A., 4,267,134, Cl. 264-46.200.
Reusser, Fritz; and Slechta, Libor, 4,267,112, Cl. 260-345.200.
Salmond, William G., 4,267,117, Cl. 260-397.200.
Sih, John C., 4,267,114, Cl. 260-345.200.
Sih, John C., 4,267,352, Cl. 560-12.000.
Sih, John C., 4,267,357, Cl. 560-53.000.
Sih, John C., 4,267,367, Cl. 562-503.000.
Sih, John C., 4,267,368, Cl. 562-503.000.
Sih, John C., 4,267,369, Cl. 562-503.000.
Sih, John C., 4,267,370, Cl. 562-503.000.
Sih, John C., 4,267,371, Cl. 564-188.000.
Sih, John C., 4,267,395, Cl. 568-819.000.
Stroud, Richard M.; and Kolakowski, Richard A., 4,267,135, Cl. 264-51.000.
Uram, Robert; and Giras, Theodore C., to Westinghouse Electric Corp. System and method for starting, synchronizing and operating a steam turbine with digital computer control. 4,267,458, Cl. 290-40.00R.
Ushigome, Susumu: *See*—
Iwaoka, Shoji; Kaito, Hiroyuki; Anzai, Shigeo; Ushigome, Susumu; Watanabe, Yoshiaki; and Mimura, Nobuyuki, 4,266,970, Cl. 75-59.000.
USM Corporation: *See*—
Hall, Dennis S., 4,266,312, Cl. 12-52.000.
Kondo, Yoshiteru, 4,267,425, Cl. 219-98.000.
Mallett, Lawrence G., 4,267,426, Cl. 219-98.000.

Usui Kokusai Sangyo Kabushiki Kaisha: *See*—
Usui, Masayoshi, 4,266,577, Cl. 138-109.000.

Usui, Masayoshi, to Usui Kokusai Sangyo Kabushiki Kaisha. Collared fuel injection pipe for engines. 4,266,577, Cl. 138-109.000.

V.I.V. Engineering Co., Ltd.: *See*—
Hishida, Tadashi, 4,266,634, Cl. 188-75.000.
Kondo, Masahiko, 4,266,635, Cl. 188-82.840.

Vaino Tapio Saalasti: *See*—
Rannanmaki, Tapio M., 4,266,483, Cl. 105-26.00R.

Valencia Aguilar, Hector. Aseismic system for structure foundation. 4,266,379, Cl. 52-1.000.

Valeron Corporation, The: *See*—
Power, Joseph S.; and Ruszala, Frederick B., 4,267,576, Cl. 364-578.000.

Valmet Oy: *See*—
Haltsonen, Eino J.; and Oksanen, Martti T., 4,267,018, Cl. 162-200.000.

Vandenbossche, Chris; and Vanhumbeeck, Jacky, to Siemens Aktiengesellschaft. Method for the automatic electro-chemical determination of the end point of a titration. 4,266,942, Cl. 23-230.00R.

Vanden Brock, Jan A., to Transidyne General Corporation. Display and processor for time-varying electric signal. 4,267,574, Cl. 364-520.000.

Vanderpoel, Richard E.: *See*—
Voss, James R.; and Vanderpoel, Richard E., 4,266,728, Cl. 239-533.800.

Van Der Sanden, Ludovicus C.: *See*—
Janssen, Theodorus M.; Gilissen, Hermanus P. J.; Soes, Lucas; Van Der Sanden, Ludovicus C.; and Van Dijk, Petrus R. M., 4,267,412, Cl. 200-6.00B.

Vanderspurt, Thomas H., to Celanese Corporation. Olefin oxidation catalyst. 4,267,386, Cl. 568-480.000.

Van Dijk, Petrus R. M.: *See*—
Janssen, Theodorus M.; Gilissen, Hermanus P. J.; Soes, Lucas; Van Der Sanden, Ludovicus C.; and Van Dijk, Petrus R. M., 4,267,412, Cl. 200-6.00B.

VanGinhoven, Robert M.; and Brown, Carl D., to Sperry Corporation. Gathering means mounting assembly for row crop harvesters. 4,266,394, Cl. 56-94.000.

Vanhumbeeck, Jacky: *See*—
Vandenbossche, Chris; and Vanhumbeeck, Jacky, 4,266,942, Cl. 23-230.00R.

Van Landeghem, Hugo: *See*—
Torck, Bernard; Van Landeghem, Hugo; Vu, Quang D.; and Hellin, Michel, 4,267,393, Cl. 568-697.000.

Van Leuven, James W., to Aquatain Partnership. Method of reducing bacteria on human tissue using liquid biocidal compositions comprising a mixture of silver ions and sodium pectate. 4,267,168, Cl. 424-75.000.

van Mil, Martinus P. G., to Stork PMT B.V. Device for making a cut extending from the vent toward the breast in a slaughtered bird. 4,266,322, Cl. 17-11.000.

Van Nordstrand, Robert A., to Chevron Research Company. Catalytic cracking with sepiolite. 4,266,672, Cl. 208-120.000.

Van Winckel, Carl E.; Dolphin, David H.; Dumitrescu, Elena; and Van Winckel, Kent F., to Van Winckel, Carl E. 2,2-Dialkoxy-6-chlorocyclohexanones. 4,267,378, Cl. 568-376.000.

Van Winckel, Kent F.: *See*—
Van Winckel, Carl E.; Dolphin, David H.; Dumitrescu, Elena; and Van Winckel, Kent F., 4,267,378, Cl. 568-376.000.

Vapor Corporation: *See*—
Bruner, Frank D.; and Kuzela, Joseph, Jr., 4,266,485, Cl. 105-61.000.

Vari-O-Matic Machine Corporation: *See*—
Wakasono, Shinichi, 4,266,700, Cl. 223-34.000.

Varian Associates, Inc.: *See*—
Berick, Alan C., 4,267,451, Cl. 250-328.000.
Welch, Kimo M., 4,266,959, Cl. 62-55.500.

Varian Mat GmbH: *See*—
Feser, Karl; and Brunnee, Curt, 4,267,448, Cl. 250-281.000.

Varjabedian, Steve: *See*—
Mason, James L.; and Varjabedian, Steve, 4,266,817, Cl. 293-117.000.

Vasalos, Iacovos A., to Standard Oil Company (Indiana). Catalytic cracking catalyst with reduced emission of noxious gases. 4,267,072, Cl. 252-455.00Z.

VDO Adolf Schindling AG: *See*—
Collonia, Harald, 4,267,491, Cl. 318-311.000.

Veb Wirkmaschinenbau Karl-Marx-Stadt: *See*—
Lindner, Heinz; Stopp, Fritz; Georgie, Wolfgang; Oehm, Werner; Muller, Lisbet; and Graubner, Brigitte, 4,266,411, Cl. 66-84.00R.

Velikoselsky, Nikolai D.; Smirnov, Anatoly I.; Perets, Nikolai Y.; Vinogradov, Sergei S.; Podbeltsev, Viktor I.; and Lakhno, Pavel E. Floating crane with load reslinging device. 4,266,680, Cl. 212-193.000.

Vellekoop, Pieter: *See*—
Marx, Arthur F.; Smid, Peter M.; and Vellekoop, Pieter, 4,267,106, Cl. 260-239.570.

Vernaleken, Hugo: *See*—
Selbeck, Harald; Wulff, Claus; Hucks, Uwe; Tresper, Erhard; and Vernaleken, Hugo, 4,267,127, Cl. 260-973.000.

Vernitron Corporation: *See*—
Leonard, Murray; and Jugl, Herbert F., 4,266,930, Cl. 431-263.000.

Veronese, Vittorio: *See*—
Davidson, Raymond J.; and Veronese, Vittorio, 4,267,069, Cl. 252-412.000.

Vetter, Edward O., to Texas Instruments Incorporated. Calculator system with anti-theft feature. 4,267,578, Cl. 364-709.000.

Vettiger, Peter: *See*—
Schindler, Hans R.; and Vettiger, Peter, 4,267,407, Cl. 179-15.55R.

Vezirian, Edward, to Smith International, Inc. Rotary rock bit and method of making same. 4,266,622, Cl. 175-366.000.

VFP Corporation: *See*—
Gallagher, Stephen F., 4,266,814, Cl. 285-319.000.

Vilenski, Dan: *See*—
Bilane, Glenn B.; Rubin, Lawrence M.; Soffa, Albert; and Vilenski, Dan, 4,266,710, Cl. 228-4.500.

Vinals, Joaquin F.: *See*—
Mookherjee, Braja D.; Mussinan, Cynthia J.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,267,076, Cl. 252-522.00R.
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Granda, Edward J.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,267,066, Cl. 252-174.110.
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,267,067, Cl. 252-174.110.

Vinogradov, Sergei S.: *See*—
Velikoselsky, Nikolai D.; Smirnov, Anatoly I.; Perets, Nikolai Y.; Vinogradov, Sergei S.; Podbeltsev, Viktor I.; and Lakhno, Pavel E., 4,266,680, Cl. 212-193.000.

Vissers, William, to Ginn, Gregory R. Antenna tuning system. 4,267,599, Cl. 455-115.000.

Vitchenko, Vladimir S.; Smirnov, Gennady K.; and Shalaev, Vladimir G. Current supply arrangement for electric machine rotor winding. 4,267,475, Cl. 310-232.000.

Vives, Van C.; and Mahan, John E., to Phillips Petroleum Company. Sulfur trioxide adducts of sulfolenes. 4,267,351, Cl. 549-19.000.

Vock, Manfred H.: *See*—
Mookherjee, Braja D.; Mussinan, Cynthia J.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,267,076, Cl. 252-522.00R.
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Granda, Edward J.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,267,066, Cl. 252-174.110.
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,267,067, Cl. 252-174.110.

Voest-Alpine Aktiengesellschaft: *See*—
Lukesch, Norbert, 4,266,575, Cl. 137-872.000.

Vogel, Eva M.: *See*—
Johnson, David W., Jr.; and Vogel, Eva M., 4,267,065, Cl. 252-62.620.

Vogelsanger, Rolf; and Wicki, Anton. Method and apparatus for securing attache cases. 4,267,553, Cl. 340-571.000.

Vogelsberg, Dieter, to Siemens Aktiengesellschaft. Method and apparatus for the layerwise SZ twisting of elements of electrical or optical cables. 4,266,398, Cl. 57-293.000.

Volpi, John P.; and Kyle, Robert R., to Texas Instruments Incorporated. Marine telephone radio. 4,267,597, Cl. 455-76.000.

Von Genk, Richard A.: *See*—
Kane, Bernard J.; and Von Genk, Richard A., 4,267,366, Cl. 560-231.000.

Voorhees, Robert E.: *See*—
Schroeder, Clifford A.; Fogg, Ralph L.; Farason, Harry J.; and Voorhees, Robert E., 4,266,470, Cl. 98-40.00R.

Vornberger, Walter, to International Shoe Machine Corporation. Boot upper quarter molding machine. 4,266,313, Cl. 12-54.300.

Voss, James R.; and Vanderpoel, Richard E., to Ambac Industries, Incorporated. Leakless fuel injection nozzle and holder assembly. 4,266,728, Cl. 239-533.800.

Voth, Elmer D.: *See*—
Mullet, David L.; Rilling, Raymond J.; and Voth, Elmer D., 4,266,617, Cl. 172-76.000.

Vu, Quang D.: *See*—
Torck, Bernard; Van Landeghem, Hugo; Vu, Quang D.; and Hellin, Michel, 4,267,393, Cl. 568-697.000.

W. L. Keefauver, Bell Laboratories: *See*—
Saleh, Adel A. M., 4,267,532, Cl. 333-33.000.

W. Schlafhorst & Co.: *See*—
Raasch, Hans, 4,266,734, Cl. 242-18.0DD.

Waage, Clark A.: *See*—
Park, Robert H.; and Waage, Clark A., 4,267,243, Cl. 429-136.000.

Wada, Kenichi, to Minolta Camera Kabushiki Kaisha. Method of removing foreign materials from magnetic developers. 4,267,245, Cl. 430-97.000.

Wada, Yusuke: *See*—
Matsumoto, Shoichi; Kato, Hirohisa; and Wada, Yusuke, 4,266,335, Cl. 29-592.00R.

Wade, Gerald J.: *See*—
Crawford, Andrew B., Jr.; and Wade, Gerald J., 4,267,276, Cl. 435-291.000.

Wagstaff, Robert A.: *See*—
Knepper, Larimer J.; McDuffie, James W.; and Wagstaff, Robert A., 4,266,392, Cl. 56-14.500.

Wahl, Gunter; Kuhlmann, Gerhard; and Kranzler, Ernst, to Robert Bosch GmbH. Machine tool chuck. 4,266,789, Cl. 279-60.000.

Wainwright, Basil E. Rear view mirror. 4,266,856, Cl. 350-281.000.

Wakasono, Shinichi, to Vari-O-Matic Machine Corporation. Freely adjustable pin-tucking device for use in a pin tucking machine. 4,266,700, Cl. 223-34.000.

Waki, Kokichi: *See*—
Sakanoue, Seiki; Waki, Kokichi; Tsubota, Motohiko; Takahashi, Osamu; and Nakatsuka, Asao, 4,267,250, Cl. 430-214.000.

Waldmann, Jurgen: *See*—
Boddenberg, Klaus; Waldmann, Jurgen; and Demmer, Manfred, 4,267,216, Cl. 427-397.800.

Waldrop, Tom C.: *See*—
Swain, Jack W.; Thomerson, Clarence T.; and Waldrop, Tom C., 4,266,578, Cl. 138-110.000.

Walker, Donald G. Forklift towing structure. 4,266,795, Cl. 280-402.000.

Walker, John A., to Unit Rig & Equipment Co. Crimping tool. 4,266,420, Cl. 72-416.000.

Wallace-Murray Corporation: *See*—
Crooks, James W., 4,266,645, Cl. 192-58.00B.

Walraevens, Rene: *See*—
Hardy, Nicolas; Lerot, Luc; and Walraevens, Rene, 4,267,124, Cl. 260-502.00R.

Walters, David A.: *See*—
Barnhart, David A.; Britt, Ronald L.; Kroger, John E.; and Walters, David A., 4,266,528, Cl. 126-299.00D.

Wang, Chih-Chung, to Kennecott Copper Corporation. Process for providing acid-resistant oxide layers on alloys. 4,266,987, Cl. 148-6.300.

Ward, Will A. Method of removing paint from cloth. 4,266,938, Cl. 8-137.000.

Warden, Fuller; and Lewis, Eugene W. Rotary dental polishing apparatus. 4,266,933, Cl. 433-82.000.

Wardlaw, Stephen C. Hypodermic syringe. 4,266,544, Cl. 128-218.00N.

Warn Industries, Inc.: *See*—
Telford, Thomas M., 4,266,646, Cl. 192-67.00R.

Warner, David A. Optical objectives. 4,266,849, Cl. 350-27.000.

Warner Electric Brake & Clutch Company: *See*—
Obergfell, Bruno, 4,266,437, Cl. 74-424.80R.

Warner-Lambert Company: *See*—
Bowman, Peter, 4,266,340, Cl. 30-89.000.
Haskell, Theodore H.; Hutt, Marland P., Jr.; and Nicolaides, Ernest D., 4,267,180, Cl. 424-251.000.

Washington University: *See*—
Roberts, Robert, 4,267,271, Cl. 435-7.000.

Watanabe, Kiyoyuki: *See*—
Kodera, Yoshiaki; Watanabe, Kiyoyuki; and Kusu, Takayuki, 4,266,370, Cl. 47-29.000.

Watanabe, Minoru: *See*—
Uchino, Misao; and Watanabe, Minoru, 4,267,586, Cl. 368-73.000.

Watanabe, Yoshiaki: *See*—
Iwaoka, Shoji; Kaito, Hiroyuki; Anzai, Shigeo; Ushigome, Susumu; Watanabe, Yoshiaki; and Mimura, Nobuyuki, 4,266,970, Cl. 75-59.000.

Watson, Robert L. Anesthesiologists instrument tray. 4,266,669, Cl. 206-564.000.

Watts, Eric A., to Beecham Group Limited. Benzamide derivatives. 4,267,175, Cl. 424-244.000.

Waugh, John A., to Owens-Corning Fiberglas Corporation. Apparatus for chopping strands. 4,266,323, Cl. 19-0.560.

Way, Frederick: *See*—
Dechant, Thomas E.; Glaser, Edward L.; Pitt, Paul E.; and Way, Frederick, 4,267,568, Cl. 364-200.000.

Weaver, Max A.: *See*—
Davis, Thomas G.; and Weaver, Max A., 4,267,306, Cl. 528-226.000.
Giles, Ralph R.; and Weaver, Max A., 4,267,104, Cl. 260-207.300.

Webb, Robert L.: *See*—
Lewis, Joseph J.; and Webb, Robert L., 4,267,337, Cl. 548-119.000.

Weidmann, Erich: *See*—
Loepfe, Erich; Weidmann, Erich; and Graf, Walter, 4,267,554, Cl. 340-677.000.

Weidner, Richard; and Hahn, Ortwin, to CIVAG AG Institut fur Verpackungsforschung. Filling device for introducing pre-foamed post-expandable thermoplastics into molds for the production of moldings. 4,266,928, Cl. 425-584.000.

Weigl, Erwin, to Polyair Produkt Design Gesellschaft m.b.h. Binding for cross country skis. 4,266,805, Cl. 280-615.000.

Weigl, Erwin; and Stritzl, Karl, to TMC Corporation. Safety ski binding. 4,266,806, Cl. 280-618.000.

Weiman, Carl F. R.: *See*—
Chaikin, George M.; and Weiman, Carl F. R., 4,267,573, Cl. 364-515.000.

Weiner, Norbert. Thermal fuse for electrical apparatus. 4,267,542, Cl. 337-227.000.

Weinert, Raymond J., Jr.: *See*—
Benton, Kenneth C.; White, James F.; Uebele, Curtis E.; and Weinert, Raymond J., Jr., 4,267,292, Cl. 526-79.000.

Weis, James H.: *See*—
Hechenbleiknер, Ingenuin; Enlow, William P.; and Weis, James H., 4,267,358, Cl. 560-75.000.

Weis, Siegfried K.: *See*—
Frost, Charles C.; and Weis, Siegfried K., 4,266,658, Cl. 198-687.000.

Weiskopf, Daniel A., to Bethlehem Steel Corporation. Electrolytic coating of strip on one side only. 4,267,024, Cl. 204-15.000.

Weiss, Herbert: *See*—
Mueller, Georg; and Weiss, Herbert, 4,267,154, Cl. 422-249.000.

Weitzman, Stewart; and Archibald, Roy D., to Cooper Care, Inc. Thixotropic topical fluoride-phosphate gel compositions useful for the prevention of dental caries. 4,267,167, Cl. 424-52.000.

Welch, Kimo M., to Varian Associates, Inc. Cryogenic pump with radiation shield. 4,266,959, Cl. 62-55.500.

Welch, Willard M., Jr., to Pfizer Inc. Process for the production of 2-substituted pyrido[4,3-b]-indoles. 4,267,331, Cl. 546-85.000.

Wellons, Inc.: *See*—
Schuette, Henry W., 4,266,901, Cl. 414-305.000.

Wells, Daniel R., to Trisops, Inc. Containment of plasmas at thermonuclear temperatures. 4,267,488, Cl. 315-111.700.

Wenander, Harald S., to Tremix AB. Vacuum treatment unit. 4,266,581, Cl. 141-65.000.

Wescom Switching, Inc.: *See*—
Regan, John F.; and Mehta, Bakulesh A., 4,267,593, Cl. 370-62.000.

Wescor, Inc.: *See*—
Barlow, Wayne K.; and Gibbons, Wallace A., 4,266,556, Cl. 128-760.000.

Wesley, William M., to Creative Tool Company. Combustion timing method and apparatus with direct TDC detection. 4,266,427, Cl. 73-119.00A.

Westendorf Manufacturing Co.: *See*—
Langenfeld, Joseph W.; and Westendorf, Neal W., 4,266,906, Cl. 414-686.000.
Langenfeld, Joseph W.; and Westendorf, Neal W., 4,266,909, Cl. 414-700.000.

Westendorf, Neal W.: *See*—
Langenfeld, Joseph W.; and Westendorf, Neal W., 4,266,906, Cl. 414-686.000.
Langenfeld, Joseph W.; and Westendorf, Neal W., 4,266,909, Cl. 414-700.000.

Western Electric Company, Inc.: *See*—
Ellis, Benjamin C., Jr., 4,266,399, Cl. 57-293.000.

Western Gear Corporation: *See*—
Carter, William R.; and Ellis, Larry G., 4,266,462, Cl. 89-1.50D.

Westinghouse Electric Corp.: *See*—
Bains, Gurdip S., 4,266,386, Cl. 52-584.000.
Bieberbach, George, 4,266,600, Cl. 165-76.000.
Burack, Robert D., 4,267,020, Cl. 176-87.000.
Cherry, William D.; and Goldie, Harry, 4,267,530, Cl. 333-13.000.
Lee, Pang-Kai, 4,267,476, Cl. 310-251.000.
Maier, Alfred E.; and Bratkowski, Walter V., 4,267,419, Cl. 200-288.000.
Playfoot, Kerwin C.; Bauer, Richard F.; and Goldstein, Norman P., 4,267,454, Cl. 250-370.000.
Uram, Robert; and Giras, Theodore C., 4,267,458, Cl. 290-40.00R.
White, Dale; Ayers, David L.; and Hribar, Allan E., 4,266,602, Cl. 165-124.000.

Weston Research Corporation: *See*—
Brown, William F., 4,267,089, Cl. 260-29.6MM.

Westra, Marlin D. Method and instrument for testing the operating characteristics of a capacitor. 4,267,503, Cl. 324-60.00C.

WGW Westdeutsche Getriebe- und Kupplungswerke GmbH: *See*—
Reppert, Rudi, 4,266,436, Cl. 74-395.000.

Whaley, Robert L.; and Day, James L., to Pullman Incorporated. Variance compensating coupler for container-carrying trailer chassis. 4,266,820, Cl. 296-35.300.

Wheeler, Keith A.; and Hastings, Dawson W., to Allis-Chalmers Corporation. Articulated plow with central support providing counter moment for rear section. 4,266,618, Cl. 172-314.000.

Wheeler, Raymond R. Carrier for garment hangers. 4,266,705, Cl. 294-163.000.

Whirlpool Corporation: *See*—
Barnard, Walter C.; and Dahlstrom, Kenneth J., 4,266,837, Cl. 312-351.000.
Frisbie, Richard N., 4,267,462, Cl. 307-119.000.

Whirpool Corporation: *See*—
Gurubatham, Vincent P., 4,266,565, Cl. 134-144.000.

White, Dale; Ayers, David L.; and Hribar, Allan E., to Westinghouse Electric Corp. Heat exchanger for cooling electrical power apparatus. 4,266,602, Cl. 165-124.000.

White Development Corporation: *See*—
Tudisco, Vincent J., 4,266,588, Cl. 145-61.00D.

White, James F.: *See*—
Benton, Kenneth C.; White, James F.; Uebele, Curtis E.; and Weinert, Raymond J., Jr., 4,267,292, Cl. 526-79.000.

White, Letcher T.: *See*—
ElDifrawi, Ahmed A., 4,266,404, Cl. 62-79.000.

White Metal Rolling & Stamping Corp.: *See*—
Larson, Clayton E.; and Lemp, Edward H., 4,266,631, Cl. 182-211.000.

White Motor Corporation of Canada, Limited: *See*—
Powell, Thomas E.; and Ito, Shiro T., 4,266,560, Cl. 130-27.00T.

White, Richard J.; and Lancini, Giancarlo, to Gruppo Lepetit S.p.A. *Streptomyces mediterranei* mutant capable of production of rifamycin B. 4,267,274, Cl. 435-253.000.

White, Thomas D.: *See*—
Boudreau, James C.; and White, Thomas D., 4,267,195, Cl. 426-2.000.

Whitehead, Richard O., to Shell Oil Company. Styrenic impact polymers. 4,267,283, Cl. 525-89.000.

Whitehouse, Harper J.: *See*—
Bond, James W.; Alsup, James M.; Speiser, Jeffrey M.; Whitehouse, Harper J.; and Lagnado, Isaac, 4,267,580, Cl. 364-824.000.

Wibau Maschinenfabrik Hartmann AG: *See*—
Haidlen, Goetz; and Groepl, Edmund, 4,266,673, Cl. 209-139.00R.

Wiblin, Wayne T., to Towmotor Corporation. Magnetic control apparatus. 4,267,544, Cl. 338-32.00H.

Wicki, Anton: *See—*
Vogelsanger, Rolf; and Wicki, Anton, 4,267,553, Cl. 340-571.000.
Widen, Bo G.: *See—*
Tranberg, Erik R.; and Widen, Bo G., 4,266,711, Cl. 228-135.000.
Wieber, Karl R.: *See—*
Reese, Robert O.; Wieber, Karl R.; and Hartman, James T., 4,267,502, Cl. 323-237.000.
Wiedmann, Erwin: *See—*
Trotscher, Otto; and Wiedmann, Erwin, 4,266,862, Cl. 351-14.000.
Wiese, Winfred J., to Borg-Warner Corporation. Mechanical seal assembly. 4,266,786, Cl. 277-40.000.
Wiezer, Hartmut, to Hoechst Aktiengesellschaft. Process for the manufacture of 7-nitro-1,3,5-triaza-adamantane. 4,267,322, Cl. 544-180.000.
Wild, Malcolm S.: *See—*
Blackburn, David; and Wild, Malcolm S., 4,266,940, Cl. 8-538.000.
Wildfurster, Heinrich: *See—*
Jochums, Peter; Stratmann, Klaus; Henkel, Egon; and Wildfurster, Heinrich, 4,266,484, Cl. 105-29.00R.
Wilhelmi, Julius B.; and Anderson, Bert O. Table section aligning and fastening device. 4,266,882, Cl. 403-14.000.
Wilkerson, Larry A.: *See—*
Barecki, Chester J.; and Wilkerson, Larry A., 4,266,822, Cl. 296-65.00R.
Wilkinson, William L. Seal plug. 4,267,401, Cl. 174-77.00R.
William H. Rorer, Inc.: *See—*
Darkes, Paul R.; Campbell, Henry F.; and Douglas, George H., 4,267,388, Cl. 568-642.000.
Williams, Albert L.: *See—*
Chen, Catherine S. H.; Schmitt, Kirk D.; and Williams, Albert L., 4,267,123, Cl. 260-501.120.
Williams, Charles J.: *See—*
Ljung, Bo H. G.; and Williams, Charles J., 4,267,478, Cl. 310-315.000.
Williams, Malcolm; Tingey, Albert R.; Southgate, John P.; and Russell, Steven J., to Lucas Industries Limited. Fuel injection systems. 4,266,522, Cl. 123-492.000.
Willis, Brian J.; Christenson, Philip A.; and Barton, Derek H. R., to Fritzsche Dodge & Olcott Inc. Process for preparing β-(3-exo-hydroxy-endo-2,3-dimethyl-2-norbornyl)-propionic acid δ-lactone. 4,267,111, Cl. 260-343.210.
Wilson, Harold L. Check valve. 4,266,569, Cl. 137-527.800.
Wilson, Robert C.: *See—*
Heck, Roland H.; Oleck, Stephen M.; Shih, Stuart S.; and Wilson, Robert C., 4,267,033, Cl. 208-216.0PP.
Wilterdink, Bernard W., to Cone-Blanchard Machine Company. Machine speed controller. 4,267,495, Cl. 318-571.000.
Windmoller & Holscher: *See—*
Achelpohl, Fritz; Feldkaper, Richard; and Blom, Friedrich, 4,266,654, Cl. 198-425.000.
Feldkamper, Richard, 4,266,469, Cl. 493-219.000.
Winter, Gerhard, to Schon & Cie GmbH Maschinenfabrik. Machine for reeving and/or lasting shoes in the heel and ankle part. 4,266,311, Cl. 12-10.100.
Wissel, F. A.; and Kiliman, D. A., to Cincinnati Electronics Corporation. QPSK Suppressed carrier with rotating reference phase. 4,267,591, Cl. 370-11.000.
Wissel, Kurt: *See—*
Kuxdorf, Bernhard; Wissel, Kurt; and Kaiser, Karl, 4,266,949, Cl. 55-186.000.
Witenhafer, Donald E.: *See—*
Jones, Richard A.; and Witenhafer, Donald E., 4,267,291, Cl. 526-62.000.
Witte, Wolfgang, to Bodenseewerk Perkin-Elmer & Co. Apparatus for determining the concentration of the components of a sample. 4,267,572, Cl. 364-498.000.
Witzke, Horst: *See—*
Chen, Schoen-nan; Russak, Michael A.; Witzke, Horst; Reichman, Joseph; and Deb, Satyendra K., 4,266,338, Cl. 29-623.200.
Wolf, Milton, to American Home Products Corporation. Method for treating inflammation. 4,267,192, Cl. 424-308.000.
Wolff, Erich: *See—*
Kunitz, Friedrich-Wilhelm; Wolff, Erich; and Frank, Karl, 4,267,263, Cl. 430-469.000.
Wolff Walsrode Aktiengesellschaft: *See—*
Behn, Rudolf; Hoppe, Lutz; and Bohmer, Branislav, 4,267,059, Cl. 210-736.000.
Wolgamott, John E.; and Zink, Gerald P. High pressure fluid apparatus. 4,266,620, Cl. 175-215.000.
Wollangk, Edward G.: *See—*
Roland, David R.; and Wollangk, Edward G., 4,266,546, Cl. 128-285.000.
Wollwage, Peter: *See—*
Michl, Rudy; and Wollwage, Peter, 4,267,097, Cl. 260-42.150.
Wolwowicz, Casimir S., to Gero Industries, Inc. Continuous automatic feeding apparatus. 4,266,691, Cl. 222-77.000.
Wonderling, Harold J.: *See—*
Oare, Arthur A.; and Wonderling, Harold J., 4,266,954, Cl. 55-341.00R.
Woo, Ji Y., to Bendix Corporation, The. Wheel cylinder. 4,266,640, Cl. 188-363.000.
Wood, Charles L., to Ball Corporation. Override system for glass forming machinery. 4,266,961, Cl. 65-29.000.
Wood, Leonard A. Adjustable trailer hitch device. 4,266,799, Cl. 280-490.00R.
Wood, Obert R., II: *See—*
Silfvast, William T.; Szeto, Leo H.; and Wood, Obert R., II, 4,267,525, Cl. 331-94.50G.
Wood, Ray E. Manual tool. 4,266,587, Cl. 81-1.00R.
Woodhouse, Geoffrey D.: *See—*
Sumegi, Robert B.; Woodhouse, Geoffrey D.; Mattson, George B.; Jansen, Harvey B.; Bolliger, Frederic E.; and Hatch, Robert A., 4,266,401, Cl. 60-39.16R.
Worms, Karl-Heinz: *See—*
Blum, Helmut; Hempel, Hans-Ulrich; and Worms, Karl-Heinz, 4,267,108, Cl. 260-326.610.
Worne, Howard E.: *See—*
Erickson, Lennart G.; and Worne, Howard E., 4,267,049, Cl. 210-606.000.
Wright, David C.: *See—*
Guzowski, Matthew M.; Schaffer, Stephen P.; and Wright, David C., 4,266,973, Cl. 75-134.00N.
Wright, Jerry A.: *See—*
Sloan, Cephas H.; Wright, Jerry A.; and Morie, Gerald P., 4,267,002, Cl. 156-276.000.
Wronski, Christopher R.; and Myers, Bruce P., to Exxon Research and Engineering Company. Enhanced open circuit voltage in amorphous silicon photovoltaic devices. 4,266,984, Cl. 136-255.000.
Wuerflein, James G., to Burro-Badger Corporation. Outrigger float pad assembly. 4,266,809, Cl. 280-766.000.
Wulff, Claus: *See—*
Selbeck, Harald; Wulff, Claus; Hucks, Uwe; Tresper, Erhard; and Vernaleken, Hugo, 4,267,127, Cl. 260-973.000.
Wunderlich, Klaus: *See—*
Groll, Manfred; and Wunderlich, Klaus, 4,267,107, Cl. 260-242.200.
Württembergische Filztuchfabrik: *See—*
Kohler, Ernst; and Moninger, Friedrich, 4,267,226, Cl. 428-223.000.
Wust, Willi: *See—*
Christophliemk, Peter; Wust, Willi; and Carduck, Franz-Josef, 4,267,158, Cl. 423-329.000.
Wysong, Robert D., to Du Pont de Nemours, E. I., and Company. Process for preparing cold water-soluble films from PVA by melt extrusion. 4,267,145, Cl. 264-563.000.
Xerox Corporation: *See—*
Kramer, William E.; and Malinowski, Frank P., 4,266,762, Cl. 271-225.000.
Ziolo, Ronald F.; and Lewis, Richard B., 4,267,247, Cl. 430-120.000.
Yagi, Akira; Miyoshi, Ichiro; and Nogami, Nobusue, to Duskin Franchise Co., Ltd. Dust-controlling mat having good flame-proofness. 4,267,220, Cl. 428-96.000.
Yajima, Mizuo, to Asama Chemical Co., Ltd. Cyclodextrins as malodorous breath reducing agents. 4,267,166, Cl. 424-48.000.
Yajima, Seishi; Okamura, Kiyohito; Shishido, Toetsu; and Hasegawa, Yoshio, to Foundation: The Research Institute for Special Inorganic Materials, The. Method for producing corrosion-, heat- and oxidation-resistant materials. 4,267,210, Cl. 427-226.000.
Yajima, Seishi; Okamura, Kiyohito; Shishido, Toetsu; and Hasegawa, Yoshio, to Foundation: The Research Institute for Special Inorganic Materials, The. Process for producing corrosion-, heat- and oxidation-resistant shaped article. 4,267,211, Cl. 427-228.000.
Yamada, Kaichi: *See—*
Sasaki, Umekichi; Tsunemi, Masaaki; Yamada, Kaichi; and Morikawa, Yoshiyuki, 4,267,064, Cl. 252-52.00A.
Yamada, Nobuo: *See—*
Kobayashi, Tatuo; and Yamada, Nobuo, 4,267,128, Cl. 261-44.00C.
Yamada, Yasuteru; and Kadota, Kenji, to Sumitomo Metal Industries, Ltd.; and Sumitomo Heavy Industries, Ltd. Process for producing metallized pellets from raw pellets by controlling distribution of temperature in a rotary kiln. 4,266,967, Cl. 75-36.000.
Yamaguchi, Hiroaki: *See—*
Nishida, Minoru; Hattori, Tadashi; and Yamaguchi, Hiroaki, 4,266,518, Cl. 123-416.000.
Yamaguchi, Hiroshi: *See—*
Hirabayashi, Hideo; Yamaguchi, Hiroshi; and Uemura, Masahiko, 4,267,031, Cl. 208-106.000.
Yamaguchi, Tetsuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Electronic watches. 4,267,589, Cl. 368-109.000.
Yamaki, Kiyoshi: *See—*
Matsuoka, Hideoki; Oka, Takashi; Mizote, Masanori; Yamaki, Kiyoshi; Nomura, Hiroyuki; Mogi, Takaaki; and Mimura, Akitoshi, 4,267,494, Cl. 318-568.000.
Yamamoto, Katsunobu: *See—*
Harada, Hideki; Yamashita, Keitaro; and Yamamoto, Katsunobu, 4,266,328, Cl. 29-116.00R.
Yamamoto, Nobuo: *See—*
Sugimoto, Naohiko; Horie, Ikutaro; Nagao, Kameji; Yoneyama, Masakazu; Nakayama, Yasuhiro; and Yamamoto, Nobuo, 4,267,265, Cl. 430-523.000.
Yamanaka, Masami: *See—*
Kawanishi, Shozo; and Yamanaka, Masami, 4,266,623, Cl. 177-25.000.
Yamashita, Keitaro; and Goto, Ryuji, to Hitachi Metals, Ltd. Magnetbrush development process of electric pattern images. 4,267,248, Cl. 430-122.000.
Yamashita, Keitaro: *See—*
Harada, Hideki; Yamashita, Keitaro; and Yamamoto, Katsunobu, 4,266,328, Cl. 29-116.00R.
Yamashita, Tadakazu: *See—*
Katoh, Yasuo; Kakegawa, Hideo; Hayashi, Shigeyuki; and Yamashita, Tadakazu, 4,267,085, Cl. 260-28.5AS.

Yamato Scale Company, Limited: *See*—
Kawanishi, Shozo; and Yamanaka, Masami, 4,266,623, Cl. 177-25.000.
Yamazaki, Takeo: *See*—
Miyoshi, Tadahiko; and Yamazaki, Takeo, 4,266,979, Cl. 106-57.000.
Yang, Ling: *See*—
Kaae, James L.; Reynolds, George H.; Sterling, Stewart A.; and Yang, Ling, 4,267,019, Cl. 176-82.000.
Yano, Hidetoshi: *See*—
Nakahara, Tosio; Yano, Hidetoshi; and Kasahara, Nobuo, 4,267,201, Cl. 427-27.000.
Yashita, Hajime: *See*—
Matsuzawa, Mitsuo; and Yashita, Hajime, 4,267,605, Cl. 455-266.000.
Yasuda, Hiroshi: *See*—
Osakabe, Yoshio; and Yasuda, Hiroshi, 4,267,603, Cl. 455-186.000.
Yasuda, Shigeo: *See*—
Matsuda, Akira; Goshima, Norio; Yasuda, Shigeo; Iwasaki, Motoaki; and Nishino, Hirc shi, 4,267,546, Cl. 340-58.000.
Yasuda, Yasuo: *See*—
Yokoyama, Takayuki; Nakayama, Yoshiaki; and Yasuda, Yasuo, 4,267,080, Cl. 260-4.00R.
Yasui, Robert K.: *See*—
Mesch, Hans G.; Debenham, Colin H.; and Yasui, Robert K., 4,267,003, Cl. 156-356.000.
Yasuoka, Tetu: *See*—
Naito, Kazuaki; Tetekawa, Takaiki; Sogo, Shigeyuki; Higaki, Kazuhiko; Yasuoka, Tetu; and Hosoi, Hidetoshi, 4,266,885, Cl. 405-109.000.
Yates, Douglas A.; Hatch, Arthur E.; and Goldsmith, Jeff M., to Mobil Tyco Solar Energy Corporation. Apparatus for crystal growth control. 4,267,151, Cl. 422-105.000.
Yazawa, Chihiro: *See*—
Koike, Wataro; Sasuga, Tadashi; and Yazawa, Chihiro, 4,267,317, Cl. 542-416.000.
Yeager, Charles A. Blackjack 21 computer. 4,266,770, Cl. 273-148.00R.
Yeh, Kuo-Chen; and Mazzella, Frank, to Block Drug Company Inc. Effervescent stannous fluoride tablet. 4,267,164, Cl. 424-44.000.
Yli-Vakkuri, Erkki, to Enso-Gutzeit Osakeyhto03. Means for washing cellulose pulp. 4,266,413, Cl. 68-158.000.
Yokoe, Isamu: *See*—
Nishimura, Hideo; Tokura, Yasufumi; Unno, Kunihiko; Enomoto, Minoru; Yokoe, Isamu; Shimizu, Norihiko; and Ohmura, Haruo, 4,266,375, Cl. 51-165.710.
Yokoyama, Kenji, to Nippon Gakki Seizo Kabushiki Kaisha. Compound transistor circuitry. 4,267,521, Cl. 330-288.000.
Yokoyama, Takayuki; Nakayama, Yoshiaki; and Yasuda, Yasuo, to Asahi Kasei Kogyo Kabushiki Kaisha. Polyethylene composition for rotational molding. 4,267,080, Cl. 260-4.00R.
Yokoyama, Toshiaki, to Hitachi, Ltd. Method of operating a hydraulic turbine or a pump-turbine. 4,267,459, Cl. 290-52.000.
Yoneda, Kanji; Yuminaka, Takeo; and Nakazato, Masao, to Hitachi, Ltd. Elevator system. 4,266,632, Cl. 187-29.00R.
Yoneda, Yasuhiro; Kitamura, Kenro; Naito, Jiro; and Kitakohji, Toshisuke, to Fujitsu Limited. Negative type deep ultraviolet resist. 4,267,258, Cl. 430-270.000.
Yoneyama, Masakazu: *See*—
Sugimoto, Naohiko; Horie, Ikutaro; Nagao, Kameji; Yoneyama, Masakazu; Nakayama, Yasuhiro; and Yamamoto, Nobuo, 4,267,265, Cl. 430-523.000.
Yoo, Jin S.: *See*—
Burk, Emmett H., Jr.; Yoo, Jin S.; Karch, John A.; and Sun, Jui-Yuan, 4,267,032, Cl. 208-113.000.
Yoritomi, Kenzaburo; Kezuka, Teruo; and Moriya, Mitsumasa, to Sanmatsu Kogyo Co., Ltd. Method for the chromatographic separation of soluble components in feed solution. 4,267,054, Cl. 210-659.000.
Yorkshire Chemicals Limited: *See*—
Blackburn, David; and Wild, Malcolm S., 4,266,940, Cl. 8-538.000.
Yoshihara, Toshihiko: *See*—
Makino, Yoshihiro; and Yoshihara, Toshihiko, 4,266,950, Cl. 55-196.000.
Yoshimine, Jun-ichi: *See*—
Kohmura, Tamotsu; and Yoshimine, Jun-ichi, 4,267,133, Cl. 264-18.000.
Yoshimoto, Akihiro: *See*—
Oki, Toshikazu; Yoshimoto, Akihiro; Inui, Taiji; Takeuchi, Tomio; and Umezawa, Hamao, 4,267,312, Cl. 536-17.00A.
Yu, Henry H. S.: *See*—
Teague, Richard K.; and Yu, Henry H. S., 4,266,948, Cl. 55-126.000.
Yuminaka, Takeo: *See*—
Yoneda, Kanji; Yuminaka, Takeo; and Nakazato, Masao, 4,266,632, Cl. 187-29.00R.
Zabel, Wolf: *See*—
Bender, Hans; Graf, Rupprecht; Unkelbach, Karl-Heinz; and Zabel, Wolf, 4,266,982, Cl. 134-18.000.
Zamek, Otto S., to General Electric Company. Polyester imide wire enamels. 4,267,231, Cl. 428-379.000.
Zamfirescu, Leon N.: *See*—
Dillon, Robert F., Jr.; Hall, James J.; and Zamfirescu, Leon N., 4,266,842, Cl. 339-97.00P.
Zenner, Armin: *See*—
Scholl, Hans-Joachim; and Zenner, Armin, 4,267,353, Cl. 560-24.000.
Zepp, Charles M.: *See*—
Locatell, Louis, Jr.; Zepp, Charles M.; and Cieciuch, Ronald F., 4,267,251, Cl. 430-224.000.
Zerox Corporation: *See*—
Dillon, Robert F., Jr.; Hall, James J.; and Zamfirescu, Leon N., 4,266,842, Cl. 339-97.00P.
Zhabin, Ivan Y.: *See*—
Birjukov, Mikhail N.; Maslov, Gennady N.; Smorodinnikov, Vladimir P.; Kulikov, Anatoly P.; Udilova, Ida G.; Zuev, Vladimir K.; Lukyanov, Anatoly A.; Tolstopyatov, Konstantin S.; Kalinichev, Alexandr E.; and Zhabin, Ivan Y., 4,266,922, Cl. 425-182.000.
Ziegenhain, William C., to Conoco, Inc. Method of making aluminum chlorohydrate. 4,267,161, Cl. 423-462.000.
Ziems, Horst, to Claas OGH, The. Hydraulic valve device. 4,266,466, Cl. 91-420.000.
Zikonix Corporation: *See*—
Allport, John J., 4,266,425, Cl. 73-61.00R.
Zink, Gerald P.: *See*—
Wolgamott, John E.; and Zink, Gerald P., 4,266,620, Cl. 175-215.000.
Zinser Textilmaschinen: *See*—
Donmez, Atilla; and Igel, Wolfgang, 4,266,397, Cl. 57-261.000.
Ziolo, Ronald F.; and Lewis, Richard B., to Xerox Corporation. Low specific gravity magnetic carrier materials. 4,267,247, Cl. 430-120.000.
Zissimopoulos, Nicholas, to Baxter Travenol Laboratories, Inc. Controlled volume liquid meter defining improved plunger means. 4,266,697, Cl. 222-450.000.
Zoecon Corporation: *See*—
Anderson, Richard J.; and Henrick, Clive A., 4,267,359, Cl. 560-104.000.
Anderson, Richard J.; and Henrick, Clive A., 4,267,363, Cl. 560-183.000.
Zorzi, Edward S., to General Electric Company. Flywheel including a cross-ply composite core and a relatively thick composite rim. 4,266,442, Cl. 74-572.000.
Zuev, Vladimir K.: *See*—
Birjukov, Mikhail N.; Maslov, Gennady N.; Smorodinnikov, Vladimir P.; Kulikov, Anatoly P.; Udilova, Ida G.; Zuev, Vladimir K.; Lukyanov, Anatoly A.; Tolstopyatov, Konstantin S.; Kalinichev, Alexandr E.; and Zhabin, Ivan Y., 4,266,922, Cl. 425-182.000.
Zuzanov, Georgy I.; Ignatov, Jury P.; and Chinenov, Sergei P. Vertical broaching machine for internal broaching. 4,266,894, Cl. 409-283.000.
Zvezdunov, Dmitry A.: *See*—
Popov, Alexandr D.; Solomin, Vladimir A.; and Zvezdunov, Dmitry A., 4,267,471, Cl. 310-13.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF MAY, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bopp, Warren G., to Eaton Corporation. Temperature responsive coupling. Re. 30,608, Cl. 192-58.00B.

Daly, Robert E.: *See*—
Gacki, Leonard W.; and Daly, Robert E., Re. 30,610, Cl. 366-153.000.

Eaton Corporation: *See*—
Bopp, Warren G., Re. 30,608, Cl. 192-58.00B.

Facet Enterprises, Inc.: *See*—
Miller, Donald L., Re. 30,609, Cl. 192-84.00C.

Gacki, Leonard W.; and Daly, Robert E., to Picker Corporation. Fluid mixing and dispensing system. Re. 30,610, Cl. 366-153.000.

Harris, Robert R.; and Pollack, Warren J., to International Minerals & Chemical Corp. Polyurethane-modified alkyd resin. Re. 30,612, Cl. 260-22.0TN.

International Minerals & Chemical Corp.: *See*—
Harris, Robert R.; and Pollack, Warren J., Re. 30,612, Cl. 260-22.0TN.

Manschot, James G.; Mather, Byron L.; and Salvadori, Larry A., to Plastronics, Inc. Combination urine meter and drainage receptacle. Re. 30,607, Cl. 128-762.000.

Mather, Byron L.: *See*—
Manschot, James G.; Mather, Byron L.; and Salvadori, Larry A., Re. 30,607, Cl. 128-762.000.

Miller, Donald L., to Facet Enterprises, Inc. Resilient connection between inner and outer poles on electromagnetic clutch. Re. 30,609, Cl. 192-84.00C.

Picker Corporation: *See*—
Gacki, Leonard W.; and Daly, Robert E., Re. 30,610, Cl. 366-153.000.

Plastronics, Inc.: *See*—
Manschot, James G.; Mather, Byron L.; and Salvadori, Larry A., Re. 30,607, Cl. 128-762.000.

Pollack, Warren J.: *See*—
Harris, Robert R.; and Pollack, Warren J., Re. 30,612, Cl. 260-22.0TN.

Salvadori, Larry A.: *See*—
Manschot, James G.; Mather, Byron L.; and Salvadori, Larry A., Re. 30,607, Cl. 128-762.000.

Sharp, Everett H. Telescoping universal joints. Re. 30,606, Cl. 64-8.000.

Wappler, Joachim H. R. Truck mounted hoist. Re. 30,611, Cl. 414-542.000.

Witt, Gordon. Goose and duck blind. Re. 30,605, Cl. 43-1.000.

LIST OF DESIGN PATENTEES

Abramowitz, Lorne. Tie holder. 259,164, 5-12-81, Cl. D6-251.000.

Allstar Verbrauchsguter GmbH & Co. KG: *See*—
Krusche, Kurt, 259,166, Cl. D7-21.000.

Aluminum Company of America: *See*—
Welch, Bing, 259,179, Cl. D9-453.000.

Austin, John J., Jr., to Champion International Corporation. Lunch box carton. 259,175, 5-12-81, Cl. D9-431.000.

Automatic Liquid Packaging, Inc.: *See*—
Pagels, Louis T., 259,213, Cl. D9-370.000.

Ayer, Patrick C. Blood vessel trap. 259,210, 5-12-81, Cl. D24-23.000.

Baldwin Piano & Organ Company: *See*—
Kelly, Lawrence J.; and Kimble, Thomas E., 259,199, Cl. D17-14.000.

Barr, Josef J. Finger ring. 259,188, 5-12-81, Cl. D11-27.000.

Bates, Gregory A.; Emenaker, Ralph R.; and Henderson, Louis M., to Proctor & Gamble Company, The. Paper toweling. 259,219, 5-12-81, Cl. D59-2.00B.

Bates Industries, Inc.: *See*—
Beaubien, Thomas S.; Rich, Dennis C.; and Oehring, Robert E., 259,192, Cl. D12-158.000.

Beaubien, Thomas S.; Rich, Dennis C.; and Oehring, Robert E., to Bates Industries, Inc. Luggage saddle bag. 259,192, 5-12-81, Cl. D12-158.000.

Bogner, Paul. Cover for hampers. 259,169, 5-12-81, Cl. D7-194.000.

Box, Theodor M. Beverage case. 259,174, 5-12-81, Cl. D99-49.000.

Buhk, Randall P., to Steelcase Inc. Armchair. 259,155, 5-12-81, Cl. D6-31.000.

Bunger, Richard E. Bridging platform panel for animal confinement pens. 259,218, 5-12-81, Cl. D30-02.000.

Candiliotis, Gerassimos C., to Uniroyal, Inc. Pneumatic tire tread and buttress. 259,191, 5-12-81, Cl. D12-146.000.

Carr, Jay B., Jr. Combined vest and blinker lights. 259,146, 5-12-81, Cl. D2-184.000.

Cartier International B.V.: *See*—
Hocq, Robert, 259,185, Cl. D10-26.000.

CEGA, Inc.: *See*—
Collura, Francesco, 259,187, Cl. D10-106.000.

Cesare, Frank C.; Flood, James H.; and Urcinas, Anthony J., to Keds Corporation, The. Sole for a shoe. 259,150, 5-12-81, Cl. D2-320.000.

Champion International Corporation: *See*—
Austin, John J., Jr., 259,175, Cl. D9-431.000.

Chapman, Darwin E., to Creative Phototronics, Inc. Digital exposure meter. 259,198, 5-12-81, Cl. D16-39.000.

Cole Grain Company: *See*—
Wilson, William H.; and Cole, Joy D., 259,189, Cl. D12-53.000.

Cole, Joy D.: *See*—
Wilson, William H.; and Cole, Joy D., 259,189, Cl. D12-53.000.

Collura, Francesco, to CEGA, Inc. Intrusion alarm. 259,187, 5-12-81, Cl. D10-106.000.

Conwed Corporation: *See*—
Hendrickson, Miner H., 259,215, Cl. D25-97.000.

Corley, Christina C.: *See*—
Massow, Frank A., 259,156, Cl. D6-36.000.

Corley, Marjorie M.: *See*—
Massow, Frank A., 259,156, Cl. D6-36.000.

Cousins, Michael A., to Gillette Company, The. Facial sauna housing. 259,207, 5-12-81, Cl. D23-148.000.

Creamer, Joan K.: *See*—
Martin, Robert L.; and Creamer, Joan K., 259,216, Cl. D26-118.000.

Creative Phototronics, Inc.: *See*—
Chapman, Darwin E., 259,198, Cl. D16-39.000.

Crosbie, William D., Sr. Storage cabinet for safety equipment or the like. 259,160, 5-12-81, Cl. D6-127.000.

Daenen, Robert H. C. M., to Dart Industries Inc. Lunch box. 259,167, 5-12-81, Cl. D7-76.000.

D'Alessandro, Vittoria A. Jewelry cabinet. 259,162, 5-12-81, Cl. D6-164.000.

Dantzer, Elonne: *See*—
Goldfarb, Adolph E.; and Dantzer, Elonne, 259,203, Cl. D21-184.000.

Dart Industries Inc.: *See*—
Daenen, Robert H. C. M., 259,167, Cl. D7-76.000.

Descente Ltd.: *See*—
Inoue, Ryoichi, 259,145, Cl. D2-28.000.

Doi, Tetsuyuki; and Shohoji, Takeshi, to Ryobi Limited. Fishing spinning reel. 259,205, 5-12-81, Cl. D22-25.000.

Durand, Jean-Jacques. Goblet or similar article. 259,165, 5-12-81, Cl. D7-13.000.

Dyson, Evelyna C., to Revlon, Inc. Section console for use with cosmetic displays. 259,158, 5-12-81, Cl. D6-85.000.

Emenaker, Ralph R.: *See*—
Bates, Gregory A.; Emenaker, Ralph R.; and Henderson, Louis M., 259,219, Cl. D59-2.00B.

Emms, Mervyn C., to John Lysaght (Australia) Limited. Fixing clip for roofing or siding material or similar article. 259,170, 5-12-81, Cl. D8-382.000.

Evans, Catherine C., to Will Ross, Inc. Nurse's headwear. 259,147, 5-12-81, Cl. D2-237.000.

Evans, Catherine C., to Will Ross, Inc. Nurse's headwear. 259,148, 5-12-81, Cl. D2-240.000.

Flood, James H.: *See*—
Cesare, Frank C.; Flood, James H.; and Urcinas, Anthony J., 259,150, Cl. D2-320.000.

Foggia, Donald; and Pomponi, Roman, to TIE/Communications, Inc. Base for a telephone set. 259,212, 5-12-81, Cl. D24-53.000.

Francis, David H.: *See*—
Francis, Gladys M.; and Francis, David H., 259,184, Cl. D10-15.000.

Francis, Gladys M.; and Francis, David H., to Microtime, Incorporated. Digital clock. 259,184, 5-12-81, Cl. D10-15.000.

Gautama, Anil K. Tongue cleaner. 259,209, 5-12-81, Cl. D24-10.000.

General Electric Company: *See—*
Martin, Robert L.; and Creamer, Joan K., 259,216, Cl. D26-118.000.

General Housewares Corp.: *See—*
Thauer, William R., 259,161, Cl. D6-157.000.

Gibbons, Robert R., to Insulation Technology Corporation. Housing for insulation blowing machine. 259,197, 5-12-81, Cl. D15-122.000.

Gillette Company, The: *See—*
Cousins, Michael A., 259,207, Cl. D23-148.000.

Goldfarb, Adolph E.; and Dantzer, Elonne, to Goldfarb, Adolph E. Doll figure. 259,203, 5-12-81, Cl. D21-184.000.

Graybill, John. Letter holder. 259,159, 5-12-81, Cl. D6-114.000.

Henderson, Louis M.: *See—*
Bates, Gregory A.; Emenaker, Ralph R.; and Henderson, Louis M., 259,219, Cl. D59-2.00B.

Hendrickson, Miner H., to Conwed Corporation. Ceiling panel or similar article. 259,215, 5-12-81, Cl. D25-97.000.

Heuser, Barry, to Manhattan Industries, Inc. Expansible belt buckle. 259,152, 5-12-81, Cl. D2-427.000.

Hirtle, Clayton N. Cap for dispensing disinfectants. 259,183, 5-12-81, Cl. D9-450.000.

Hocq, Robert, to Cartier International B.V. Alarm clock. 259,185, 5-12-81, Cl. D10-26.000.

Hofer, Otto, to Interondo AG. Package for ampoules. 259,176, 5-12-81, Cl. D9-346.000.

Hovick, Ronald L.: *See—*
Sellers, Virgil E.; Lowman, Donald E.; and Hovick, Ronald L., 259,193, Cl. D12-157.000.

Ichikawa, Shinpei: *See—*
Welch, Robert A.; and Ichikawa, Shinpei, 259,200, Cl. D18-7.000.

Inoue, Ryoichi, to Descente Ltd. Pants. 259,145, 5-12-81, Cl. D2-28.000.

Insulation Technology Corporation: *See—*
Gibbons, Robert R., 259,197, Cl. D15-122.000.

Interdica S.A.: *See—*
Perrin, Alain D., 259,186, Cl. D10-32.000.

Interondo AG: *See—*
Hofer, Otto, 259,176, Cl. D9-346.000.

Item House, Inc.: *See—*
White, Lee C., Jr.; and Persky, Warren E., 259,154, Cl. D3-75.000.

J. L. Prescott Co.: *See—*
Saenz, Henry, 259,181, Cl. D9-389.000.

John Lysaght (Australia) Limited: *See—*
Emms, Mervyn C., 259,170, Cl. D8-382.000.

Kabushiki Kaisha Bandai Overseas: *See—*
Yamashina, Naoharu, 259,202, Cl. D21-134.000.

Keds Corporation, The: *See—*
Cesare, Frank C.; Flood, James H.; and Urcinas, Anthony J., 259,150, Cl. D2-320.000.

Kelly, Lawrence J.; and Kimble, Thomas E., to Baldwin Piano & Organ Company. Electric guitar. 259,199, 5-12-81, Cl. D17-14.000.

Kimble, Thomas E.: *See—*
Kelly, Lawrence J.; and Kimble, Thomas E., 259,199, Cl. D17-14.000.

Kishbaugh, John E.; and Storholm, Gordon. Jogger's belt. 259,151, 5-12-81, Cl. D2-383.000.

Koughan, Walter L. Resilient shock absorber for boat docking lines or the like. 259,194, 5-12-81, Cl. D12-159.000.

Krusche, Kurt, to Allstar Verbrauchsguter GmbH & Co. KG. Working and serving board with a removable strainer. 259,166, 5-12-81, Cl. D7-21.000.

Landry, Kossuth J., Jr. Soil erosion prevention block. 259,214, 5-12-81, Cl. D25-91.000.

Larko, Christine I. E., to Molnlycke Aktiebolag. Disposable diaper. 259,211, 5-12-81, Cl. D24-50.000.

Lauren, Ralph, to Warner/Lauren Ltd. Cologne bottle. 259,173, 5-12-81, Cl. D9-401.000.

Leard, Anon G.; and Leard, Dorothy M. Picture frame. 259,163, 5-12-81, Cl. D6-234.000.

Leard, Dorothy M.: *See—*
Leard, Anon G.; and Leard, Dorothy M., 259,163, Cl. D6-234.000.

Leisurecraft Products Ltd.: *See—*
Pardo, John, 259,196, Cl. D14-64.000.

Lolift Limited: *See—*
Nattrass, Frank, 259,177, Cl. D9-432.000.
Nattrass, Frank, 259,178, Cl. D9-246.000.

Lowman, Donald E.: *See—*
Sellers, Virgil E.; Lowman, Donald E.; and Hovick, Ronald L., 259,193, Cl. D12-157.000.

Lubke, Karl, to Lubke KG. Couch. 259,157, 5-12-81, Cl. D6-61.000.

Lubke KG: *See—*
Lubke, Karl, 259,157, Cl. D6-61.000.

Manhattan Industries, Inc.: *See—*
Heuser, Barry, 259,152, Cl. D2-427.000.

Martin, Robert L.; and Creamer, Joan K., to General Electric Company. Decorative night light diffuser. 259,216, 5-12-81, Cl. D26-118.000.

Massow, Frank A., to Corley, Marjorie M.; and Corley, Christina C. Rockable footstool. 259,156, 5-12-81, Cl. D6-36.000.

McCullough, John R. Roof vent. 259,208, 5-12-81, Cl. D23-153.000.

Microtime, Incorporated: *See—*
Francis, Gladys M.; and Francis, David H., 259,184, Cl. D10-15.000.

Molnlycke Aktiebolag: *See—*
Larko, Christine I. E., 259,211, Cl. D24-50.000.

Nattrass, Frank, to Lolift Limited. Container for bulk materials. 259,177, 5-12-81, Cl. D9-432.000.

Nattrass, Frank, to Lolift Limited. Container for bulk materials. 259,178, 5-12-81, Cl. D9-246.000.

Oehring, Robert E.: *See—*
Beaubien, Thomas S.; Rich, Dennis C.; and Oehring, Robert E., 259,192, Cl. D12-158.000.

Pagels, Louis T., to Automatic Liquid Packaging, Inc. Vial suitable for pharmaceuticals. 259,213, 5-12-81, Cl. D9-370.000.

Pardo, John, to Leisurecraft Products Ltd. Hand-held telephone. 259,196, 5-12-81, Cl. D14-64.000.

Parren, Joseph R. Evaporative cooler. 259,206, 5-12-81, Cl. D23-139.000.

Perrin, Alain D., to Interdica S.A. Wrist watch. 259,186, 5-12-81, Cl. D10-32.000.

Persky, Warren E.: *See—*
White, Lee C., Jr.; and Persky, Warren E., 259,154, Cl. D3-75.000.

Petrie, Ross J., to Simmons, Jerry Wayne. Cup warmer. 259,168, 5-12-81, Cl. D7-123.000.

Polkingharn, Orie M. Shaving lather applicator. 259,182, 5-12-81, Cl. D9-435.000.

Pomponi, Roman: *See—*
Foggia, Donald; and Pomponi, Roman, 259,212, Cl. D24-53.000.

Proctor & Gamble Company, The: *See—*
Bates, Gregory A.; Emenaker, Ralph R.; and Henderson, Louis M., 259,219, Cl. D59-2.00B.

Revlon, Inc.: *See—*
Dyson, Evelyna C., 259,158, Cl. D6-85.000.

Rich, Dennis C.: *See—*
Beaubien, Thomas S.; Rich, Dennis C.; and Oehring, Robert E., 259,192, Cl. D12-158.000.

Ross, Billy E., to Selmer Company, The. Bottle. 259,172, 5-12-81, Cl. D9-389.000.

Rowe, David E. Camper vehicle. 259,190, 5-12-81, Cl. D12-100.000.

Ryobi Limited: *See—*
Doi, Tetsuyuki; and Shohoji, Takeshi, 259,205, Cl. D22-25.000.

Saenz, Henry, to J. L. Prescott Co. Bottle. 259,181, 5-12-81, Cl. D9-389.000.

Sawada, Masaji; and Tatsugami, Harumi, to Sharp Corporation. Electronic calculating machine. 259,201, 5-12-81, Cl. D18-7.000.

Sellers, Virgil E.; Lowman, Donald E.; and Hovick, Ronald L. Vehicle luggage carrier. 259,193, 5-12-81, Cl. D12-157.000.

Selmer Company, The: *See—*
Ross, Billy E., 259,172, Cl. D9-389.000.

Sharp Corporation: *See—*
Sawada, Masaji; and Tatsugami, Harumi, 259,201, Cl. D18-7.000.

Shohoji, Takeshi: *See—*
Doi, Tetsuyuki; and Shohoji, Takeshi, 259,205, Cl. D22-25.000.

Simmons, Jerry Wayne: *See—*
Petrie, Ross J., 259,168, Cl. D7-123.000.

Smith, Bruce N., to Spherex, Incorporated. Wheel. 259,195, 5-12-81, Cl. D12-205.000.

Smith, Douglas J. Cigarette and cigar extinguisher. 259,217, 5-12-81, Cl. D27-09.000.

Spherex, Incorporated: *See—*
Smith, Bruce N., 259,195, Cl. D12-205.000.

Steelcase Inc.: *See—*
Buhk, Randall P., 259,155, Cl. D6-31.000.

Storholm, Gordon: *See—*
Kishbaugh, John E.; and Storholm, Gordon, 259,151, Cl. D2-383.000.

Tatsugami, Harumi: *See—*
Sawada, Masaji; and Tatsugami, Harumi, 259,201, Cl. D18-7.000.

Texas Instruments Incorporated: *See—*
Welch, Robert A.; and Ichikawa, Shinpei, 259,200, Cl. D18-7.000.

Thauer, William R., to General Housewares Corp. Placemat display rack. 259,161, 5-12-81, Cl. D6-157.000.

TIE/Communications, Inc.: *See—*
Foggia, Donald; and Pomponi, Roman, 259,212, Cl. D24-53.000.

Uniroyal, Inc.: *See—*
Candiliotis, Gerassimos C., 259,191, Cl. D12-146.000.

Urcinas, Anthony J.: *See—*
Cesare, Frank C.; Flood, James H.; and Urcinas, Anthony J., 259,150, Cl. D2-320.000.

Valente, Domenic R. Jewelry box. 259,153, 5-12-81, Cl. D3-66.000.

W. H. Brine Company: *See—*
Werman, Jonathan, 259,149, Cl. D2-309.000.

Wallace, Robert S. Expansion lock. 259,171, 5-12-81, Cl. D8-385.000.

Warner/Lauren Ltd.: *See—*
Lauren, Ralph, 259,173, Cl. D9-401.000.

Weast, Gerald T. Telescopic sight mount for 22 caliber rifle. 259,204, 5-12-81, Cl. D22-7.000.

Welch, Bing, to Aluminum Company of America. Knurled closure. 259,179, 5-12-81, Cl. D9-453.000.

Welch, Robert A.; and Ichikawa, Shinpei, to Texas Instruments Incorporated. Case for an electronic calculator. 259,200, 5-12-81, Cl. D18-7.000.

Werman, Jonathan, to W. H. Brine Company. Soccer shoe body. 259,149, 5-12-81, Cl. D2-309.000.

White, Lee C., Jr.; and Persky, Warren E., to Item House, Inc. Jewelry case. 259,154, 5-12-81, Cl. D3-75.000.

Will Ross, Inc.: *See*—
Evans, Catherine C., 259,147, Cl. D2-237.000.
Evans, Catherine C., 259,148, Cl. D2-240.000.

Wilson, William H.; and Cole, Joy D., to Cole Grain Company. Pallet. 259,189, 5-12-81, Cl. D12-53.000.

Yamashina, Naoharu, to Kabushiki Kaisha Bandai Overseas. Combined toy scooter and figure therefor. 259,202, 5-12-81, Cl. D21-134.000.

Zeiger, Judith R. Dispensing figurine for a box of tissue. 259,180, 5-12-81, Cl. D9-451.000.

LIST OF PLANT PATENTEES

Duffett, William E.: *See*—
Meek, Jack M.; and Duffett, William E., 4,716, Cl. 74.000.

Guo, Shuh-Lih. Orchid plant: Golden King. 4,715, 5-12-81, Cl. 68.000.

Meek, Jack M.; and Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant. 4,716, 5-12-81, Cl. 74.000.

Nor'East Miniature Roses, Inc.: *See*—
Schwartz, Ernest, deceased, 4,711, Cl. 9.000.

Schwartz, Ernest, deceased (by Schwartz, Hazel E., executrix), to Nor'East Miniature Roses, Inc. Rose plant. 4,711, 5-12-81, Cl. 9.000.

Schwartz, Hazel E., executrix: *See*—
Schwartz, Ernest, deceased, 4,711, Cl. 9.000.

Weeks, O. L. Rose plant. 4,712, 5-12-81, Cl. 11.000.

Weeks, O. L. Rose plant. 4,713, 5-12-81, Cl. 26.000.

Weeks, O. L. Rose plant. 4,714, 5-12-81, Cl. 27.000.

Yoder Brothers, Inc.: *See*—
Meek, Jack M.; and Duffett, William E., 4,716, Cl. 74.000.

CLASSIFICATION OF PATENTS

ISSUED MAY 12, 1981

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

2.5 4,266,297
22 4,266,298
46 4,266,299
247 4,266,300
410 4,266,301

CLASS 3

1.91 4,266,303
1.912 4,266,302

CLASS 4

415 4,266,304
480 4,266,305
572 4,266,306

CLASS 5

451 4,266,307
494 4,266,308

CLASS 6

12 R 4,266,309

CLASS 8

137 4,266,938
437 4,266,939
538 4,266,940

CLASS 10

86 R 4,266,310

CLASS 12

10.1 4,266,311
52 4,266,312
54.3 4,266,313
142 P 4,266,314

CLASS 15

250.16 4,266,315
304 4,266,316
322 4,266,317

CLASS 16

111 A 4,266,319
111 R 4,266,318
114 R 4,266,320
145 4,266,321

CLASS 17

11 4,266,322

CLASS 19

0.56 4,266,323
239 4,266,324

CLASS 23

230 B 4,266,941
230 R 4,266,942

CLASS 24

230 A 4,266,325
265 WS 4,266,326

CLASS 28

299 4,266,327

CLASS 29

116 R 4,266,328
222 4,266,329
267 4,266,330
449 4,266,331
570 4,266,332
571 4,266,333
583 4,266,334
592 R 4,266,335
596 4,266,336
614 4,266,337
623.2 4,266,338
829 4,266,339

CLASS 30

89 4,266,340
195 4,266,341

CLASS 33

1 Q 4,266,342
41 D 4,266,343
126.7 R 4,266,344
169 R 4,266,345
174 Q 4,266,346
393 4,266,347

CLASS 34

10 4,266,348

CLASS 36

32 R 4,266,349
44 4,266,350

CLASS 37

104 4,266,351
105 4,266,352
4,266,353

CLASS 40

21 R 4,266,354
124.1 4,266,355

CLASS 42

1 LP 4,266,356
1 Z 4,266,357
39.5 4,266,358

CLASS 43

1 Re.30,605
6.5 4,266,359
42.09 4,266,360
42.46 4,266,361
66 4,266,362
73 4,266,363
90 4,266,364

CLASS 44

51 4,266,943
63 4,266,944
68 4,266,945
4,266,946
4,266,947

CLASS 46

33 4,266,365
76 R 4,266,366
149 4,266,367
232 4,266,368
260 4,266,369

CLASS 47

29 4,266,370

CLASS 49

252 4,266,371
358 4,266,372

CLASS 51

99 4,266,373
165.71 4,266,375
165.87 4,266,374
170 R 4,266,376
262 T 4,266,377
432 4,266,378

CLASS 52

1 4,266,379
19 4,266,380
177 4,266,381
316 4,266,382
400 4,266,383
410 4,266,384
521 4,266,385
584 4,266,386
731 4,266,387
748 4,266,388

CLASS 53

396 4,266,389

CLASS 55

84 4,266,951
126 4,266,948
179 4,266,952
186 4,266,949
196 4,266,950
294 4,266,953
341 R 4,266,954
412 4,266,955
478 4,266,956

CLASS 56

1 4,266,390
14.5 4,266,391
4,266,392
14.6 4,266,393
94 4,266,394
209 4,266,395

CLASS 57

221 4,266,396
261 4,266,397
293 4,266,398
4,266,399

CLASS 59

35 R 4,266,400

CLASS 60

39.16 R 4,266,401
496 4,266,402
698 4,266,403

CLASS 62

18 4,266,957
20 4,266,958
55.5 4,266,959
79 4,266,404
160 4,266,405
183 4,266,406
371 4,266,407
474 4,266,408

CLASS 64

8 Re.30,606
12 4,266,409

CLASS 65

4 R 4,266,960
29 4,266,961

CLASS 66

84 R 4,266,410
4,266,411

CLASS 68

18 F 4,266,412
158 4,266,413

CLASS 70

252 4,266,414
264 4,266,415

CLASS 71

90 4,266,962
92 4,266,963
94 4,266,964
118 4,266,965

CLASS 72

60 4,266,416
168 4,266,417
197 4,266,418
410 4,266,419
416 4,266,420

CLASS 73

1 DV 4,266,421
2 4,266,422
15 B 4,266,423
15.6 4,266,424
61 R 4,266,425
119 A 4,266,426
4,266,427
146 4,266,428
425.4 R 4,266,429
701 4,266,430

CLASS 74

5.1 4,266,431
5.7 4,266,432
10.33 4,266,433
61 4,266,434
395 4,266,436
424.8 R 4,266,437
473 R 4,266,438
501 R 4,266,439
4,266,440
523 4,266,441
572 4,266,442
579 E 4,266,443
661 4,266,444
711 4,266,445
796 4,266,446
858 4,266,447

CLASS 75

25 4,266,966
36 4,266,967
42 4,266,968
58 4,266,969
59 4,266,970
69 4,266,971
101 R 4,266,972
134 N 4,266,973
251 4,266,974

CLASS 76

82 4,266,448
101 A 4,266,449

CLASS 81

1 R 4,266,587
57.33 4,266,450
57.35 4,266,451
121 R 4,266,452
177 G 4,266,453

CLASS 82

1 C 4,266,454

CLASS 83

84 4,266,455
731 4,266,456
745 4,266,457
864 4,266,458

CLASS 84

402 4,266,459

CLASS 85

9 R 4,266,460

CLASS 87

29 4,266,461

CLASS 89

1.5 D 4,266,462
41 AA 4,266,463

CLASS 91

29 4,266,464
234 4,266,465
420 4,266,466
437 4,266,467

CLASS 92

63 4,266,468

CLASS 98

40 R 4,266,470

CLASS 99

305 4,266,471
483 4,266,472

CLASS 100

117 4,266,473
118 4,266,474
168 4,266,475

CLASS 101

35 4,266,476
40 4,266,477
4,266,478
93.09 4,266,479
351 4,266,480
456 4,266,481

CLASS 104

172 B 4,266,482

CLASS 105

26 R 4,266,483
29 R 4,266,484
61 4,266,485
276 4,266,486
397 4,266,487

CLASS 106

1.12 4,266,975
2 4,266,976
39.5 4,266,978
43 4,266,977
57 4,266,979
97 4,266,980

CLASS 109

59 R 4,266,488

CLASS 111

1 4,266,489
3 4,266,490

CLASS 112

79 R 4,266,491
121.2 4,266,492
158 E 4,266,493
184 4,266,494

CLASS 114

106 4,266,495
126 4,266,496
144 R 4,266,497
218 4,266,498
230 4,266,499
333 4,266,500

CLASS 118

15 4,266,501
16 4,266,502
657 4,266,503
663 4,266,504
699 4,266,505
725 4,266,506
733 4,266,507

CLASS 119

2 4,266,509
29 4,266,508
51 R 4,266,510
106 4,266,511

CLASS 122

5.5 R 4,266,512
155 A 4,266,513

CLASS 123

55 R 4,266,514
198 E 4,266,515
241 4,266,516
333 4,266,517
416 4,266,518
440 4,266,519
454 4,266,520
491 4,266,521
492 4,266,522
499 4,266,523
568 4,266,524

CLASS 126

121 4,266,525
123 4,266,526
299 C 4,266,527
299 D 4,266,528
4,266,529
424 4,266,530
449 4,266,531

CLASS 127

37 4,266,981

CLASS 128

1.5 4,266,532
4,266,533
6 4,266,534
23 4,266,535
57 4,266,536
75 4,266,537
204.26 4,266,538
4,266,539
207.13 4,266,540
207.23 4,266,541
214 R 4,266,542
218 N 4,266,543
4,266,544
278 4,266,545
285 4,266,546
303.1 4,266,547
4,266,548
4,266,549
349 B 4,266,550
419 P 4,266,552
419 PG 4,266,551
585 4,266,553
633 4,266,554
753 4,266,555
760 4,266,556
762 Re.30,607
763 4,266,557
766 4,266,558
4,266,559

CLASS 130

27 T 4,266,560

CLASS 131

293 4,266,562
341 4,266,561

CLASS 133

4 A 4,266,563
5 R 4,266,564

CLASS 134

18 4,266,982
21 4,266,983
144 4,266,565

CLASS 136

255 4,266,984
256 4,267,398

CLASS 137

316 4,266,566
343 4,266,567
493.8 4,266,568
527.8 4,266,569
613 4,266,570
625.48 4,266,571
625.63 4,266,572
630.18 4,266,573
630.19 4,266,574
872 4,266,575

CLASS 138

40 4,266,576
109 4,266,577
110 4,266,578
127 4,266,579

CLASS 141

35 4,266,580
65 4,266,581
198 4,266,582

CLASS 142

56 4,266,583

CLASS 144

39 4,266,584
193 A 4,266,585

CLASS 145

1 B 4,266,586
61 D 4,266,588

CLASS 148

1.5 4,266,985
4,266,986
6.21 4,266,988
6.3 4,266,987
9 R 4,266,989
189 4,266,990

CLASS 149

42 4,266,991

CLASS 150

1.5 B 4,266,589

CLASS 152

209 D 4,266,592
218 4,266,593

CLASS 156

49 4,266,992
69 4,266,993
73.2 4,266,994
123 R 4,266,995
154 4,266,996
158 4,266,997
159 4,266,998
227 4,266,999
235 4,267,000
245 4,267,001
276 4,267,002
356 4,267,003
361 4,267,004
380 4,267,005
384 4,267,006
425 4,267,007
462 4,267,008
538 4,267,009
608 4,267,010
628 4,267,011
643 4,267,012
4,267,013
662 4,267,014

CLASS 159

47 R 4,267,015

CLASS 160

354 4,266,594

CLASS 162

146 4,267,016
190 4,267,017
200 4,267,018

CLASS 164

41 4,266,595

97 4,266,596
109 4,266,597

CLASS 165

1 4,266,598
2 4,266,599
76 4,266,600
94 4,266,601
124 4,266,602
171 4,266,603
176 4,266,604

CLASS 166

97 4,266,605
113 4,266,606
244 C 4,266,607
250 4,266,608
251 4,266,609
273 4,266,610
4,266,611
299 4,266,612
4,266,613
332 4,266,614

CLASS 171

16 4,266,615

CLASS 172

7 4,266,616
76 4,266,617
314 4,266,618

CLASS 174

1 4,267,399
31 R 4,267,400
77 R 4,267,401
137 R 4,267,402
140 S 4,267,403

CLASS 175

55 4,266,619
215 4,266,620
329 4,266,621
366 4,266,622

CLASS 176

82 4,267,019
87 4,267,020

CLASS 177

25 4,266,623
253 4,266,624

CLASS 178

46 4,267,404

CLASS 179

1 E 4,267,405
2 A 4,267,406
15.55 R 4,267,407
77 4,267,408
90 B 4,267,409
107 BC 4,267,410
184 4,267,411

CLASS 180

6.48 4,266,625
4,266,626
8 B 4,266,627
54 F 4,266,628
252 4,266,629
291 4,266,630

CLASS 182

211 4,266,631

CLASS 187

29 R 4,266,632

CLASS 188

1 A 4,266,633
75 4,266,634
76 4,266,636
82.84 4,266,635
196 P 4,266,637
218 R 4,266,638
311 4,266,639
363 4,266,640

CLASS 192

3.28 4,266,641
45 4,266,642
51 4,266,643
56 R 4,266,644
58 B Re.30,608
4,266,645
67 A 4,266,647
67 R 4,266,646
84 C Re.30,609
85 AA 4,266,648
111 A 4,266,649

CLASS 193

35 TE 4,266,650

CLASS 198

345 4,266,651
347 4,266,652
392 4,266,653
425 4,266,654
461 4,266,655
655 4,266,656
687 4,266,657
4,266,658
781 4,266,659
4,266,660
822 4,266,661
829 4,266,662

CLASS 200

6 B 4,267,412
81.4 4,267,413
86.5 4,267,414
144 B 4,267,415
4,267,416
159 B 4,267,417
163 4,267,418
288 4,267,419

CLASS 202

176 4,267,021

CLASS 203

11 4,267,022

CLASS 204

1 T 4,267,023
15 4,267,024
82 4,267,025
98 4,267,026
179 4,267,027
181 R 4,267,028
196 4,267,029
278 4,267,030

CLASS 206

223 4,266,663
349 4,266,664
445 4,266,665
461 4,266,666
469 4,266,667
557 4,266,668
564 4,266,669
600 4,266,670
626 4,266,671

CLASS 208

106 4,267,031
113 4,267,032
120 4,266,672
216 PP 4,267,033
323 4,267,034

CLASS 209

139 R 4,266,673
273 4,267,035
444 4,267,036
481 4,267,037
536 4,266,674
540 4,266,675
672 4,266,676

CLASS 210

104 4,267,040
109 4,267,041
169 4,267,042
241 4,267,043
321.2 4,267,044
322 4,267,045
490 4,267,047
512.2 4,267,048
602 4,267,038
606 4,267,049
608 4,267,050
619 4,267,051
629 4,267,052
650 4,267,053
659 4,267,054
670 4,267,055
678 4,267,056
4,267,057
716 4,267,058
736 4,267,059
741 4,267,060
767 4,267,039
772 4,267,061
780 4,267,046

CLASS 211

45 4,266,677
194 4,266,678

CLASS 212

181 4,266,679
193 4,266,680

CLASS 215

32 4,266,681
331 4,266,682

CLASS 219

10.55 E 4,267,420
51 4,267,421
69 C 4,267,422
69 S 4,267,423
86.41 4,267,424
98 4,267,425
4,267,426
121 LL 4,267,427
145.1 4,267,428
215 4,267,429
222 4,267,430
225 4,267,431
328 4,267,432
491 4,267,433
499 4,267,434
552 4,267,435

CLASS 220

3.2 4,266,683
23.83 4,266,684
74 4,266,685
90 4,266,686
257 4,266,687
273 4,266,688
307 4,266,689

CLASS 221

254 4,266,690

CLASS 222

77 4,266,691
94 4,266,692
135 4,266,693
167 4,266,694
185 4,266,695
197 4,266,696
450 4,266,697
528 4,266,698

CLASS 223

34 4,266,699
4,266,700
116 4,266,701

CLASS 224

31 4,266,702
32 A 4,266,703
42.46 A 4,266,704
253 4,266,706
275 4,266,707
326 4,266,708

CLASS 226

181 4,266,709

CLASS 228

4.5 4,266,710
135 4,266,711
175 4,266,712

CLASS 229

33 4,266,713
34 HW 4,266,714
37 E 4,266,715
39 R 4,266,716

CLASS 233

26 4,266,717

CLASS 235

92 PE 4,267,437
92 T 4,267,436
96 4,267,438
454 4,267,439

CLASS 238

9 4,266,718
283 4,266,719
349 4,266,720

CLASS 239

3 4,266,721
132 4,266,723
195 4,266,724
265.19 4,266,725
406 4,266,726
409 4,266,727
533.12 4,266,729
533.8 4,266,728
587 4,266,730
590.5 4,266,722
676 4,266,731
720 4,266,732

CLASS 241

171 4,266,733

CLASS 242

18 DD 4,266,734
56 A 4,266,735
66 4,266,736
72 B 4,266,737
74.1 4,266,738
84.21 R 4,266,739
86.52 4,266,740

CLASS 244

54 4,266,741
63 4,266,742
182 4,266,743

CLASS 248

49 4,266,744
58 4,266,745
113 4,266,746
280.1 4,266,747
425 4,266,748
652 4,266,749

CLASS 249

65 4,266,750

CLASS 250

201 4,267,440
203 R 4,267,441
207 4,267,442
221 4,267,443
227 4,267,444
255 4,267,445
4,267,446
262 4,267,447
281 4,267,448
303 4,267,449
315.2 4,267,450
328 4,267,451
366 4,267,452
368 4,267,453
370 4,267,454
431 4,267,455
492 A 4,267,456
522 4,267,457

CLASS 251

6 4,266,751
173 4,266,752
305 4,266,753
306 4,266,754

CLASS 252

8.55 R 4,267,062
49.9 4,267,063
52 A 4,267,064
62.62 4,267,065
174.11 4,267,066
4,267,067
179 4,267,068
412 4,267,069
429 R 4,267,070
439 4,267,071
455 R 4,267,073
455 Z 4,267,072
514 4,267,074
522 R 4,267,075
4,267,076
545 4,267,077

CLASS 254

18 4,266,755

CLASS 256

47 4,266,756
65 4,266,757

CLASS 260

2.3 4,267,078
3.5 4,267,079
4 R 4,267,080
17.4 UC 4,267,103
22 TN Re.30,612
4,267,081
23 AR 4,267,082
23 XA 4,267,083
4,267,084
28.5 AS 4,267,085
28.5 R 4,267,086
29.2 EP 4,267,087
4,267,088
29.6 H 4,267,093
29.6 MM 4,267,089
29.6 R 4,267,090
29.6 RB 4,267,092
29.6 RW 4,267,094
29.6 TA 4,267,091
40 R 4,267,095
4,267,096
4,267,310
42.15 4,267,097
45.75 W 4,267,098
101 4,267,099
112 R 4,267,100
4,267,101
112.5 R 4,267,102
207.3 4,267,104
239.3 A 4,267,105
239.57 4,267,106
242.2 4,267,107
326.61 4,267,108
338 4,267,109
340.7 4,267,110
343.21 4,267,111
345.2 4,267,112
4,267,113
4,267,114
373 4,267,115
376 4,267,116
397.2 4,267,117
428 4,267,118
458 R 4,267,119
463 4,267,120
465.4 4,267,121
501.12 4,267,122
4,267,123
502 R 4,267,124
545 P 4,267,125
942 4,267,126
973 4,267,127

CLASS 261

44 C 4,267,128
72 R 4,267,129
112 4,267,130
153 4,267,131

CLASS 264

3 B 4,267,132
18 4,267,133
46.2 4,267,134
51 4,267,135
87 4,267,136
113 4,267,137
117 4,267,138
229 4,267,139
291 4,267,140
328.1 4,267,141
510 4,267,142
516 4,267,143
523 4,267,144
563 4,267,145
564 4,267,146
571 4,267,147

CLASS 266

244 4,266,758

CLASS 269

323 4,266,759
4,266,760

CLASS 270

58 4,266,761

CLASS 271

225 4,266,762

CLASS 272

3 4,266,763
4,266,764
70.3 4,266,765
117 4,266,766

CLASS 273

1 R 4,266,767
25 4,266,768
86 B 4,266,769
148 R 4,266,770
150 4,266,771
218 4,266,772
232 4,266,773
275 4,266,774
278 4,266,775
310 4,266,776
4,266,777
324 4,266,778
359 4,266,779
387 4,266,780
420 4,266,781
423 4,266,782

CLASS 277

40 4,266,786
160 4,266,787
193 4,266,788

CLASS 279

60 4,266,789

CLASS 280

6.1 4,266,790
37 4,266,791
153 R 4,266,792
204 4,266,793
227 4,266,794
402 4,266,795
414 R 4,266,796
423 R 4,266,797
481 4,266,798
490 R 4,266,799
491 D 4,266,800
605 4,266,801
4,266,802
4,266,803
4,266,804
615 4,266,805
618 4,266,806
650 4,266,807
756 4,266,808
766 4,266,809
802 4,266,810
803 4,266,811

CLASS 281

29 4,266,812

CLASS 285

12 4,266,813
319 4,266,814
330 4,266,815

CLASS 290

40 R 4,267,458
52 4,267,459

CLASS 292

129 4,266,816

CLASS 293

117 4,266,817
150 4,266,818

CLASS 294

88 4,266,819
163 4,266,705

CLASS 296

35.3 4,266,820
37.6 4,266,821
65 R 4,266,822
164 4,266,823
210 4,266,824

CLASS 297

194 4,266,825

CLASS 299

2 4,266,826
20 4,266,827
53 4,266,828
64 4,266,829
87 4,266,830

CLASS 301

37 PB 4,266,831
48 4,266,832

CLASS 303

106 4,266,833

CLASS 307

38 4,267,460
105 4,267,461
119 4,267,462
238.3 4,267,465
279 4,267,466
310 4,267,468
311 4,267,469
445 4,267,463
463 4,267,464
515 4,267,470
597 4,267,467

CLASS 310

13 4,267,471
49 R 4,267,472
52 4,267,473
4,267,474
232 4,267,475
251 4,267,476
266 4,267,477
315 4,267,478
348 4,267,479
366 4,267,480

CLASS 312

8 4,266,834
244 4,266,835
246 4,266,836
351 4,266,837

CLASS 313

139 4,267,481
143 4,267,482
4,267,483
325 4,267,484
486 4,267,485
500 4,267,486

CLASS 315

107 4,267,487
111.7 4,267,488
324 4,267,489

CLASS 318

51 4,267,490
311 4,267,491
376 4,267,492
443 4,267,493
568 4,267,494
571 4,267,495
615 4,267,496
661 4,267,497
723 4,267,498
800 4,267,499
806 4,267,500

CLASS 323

237 4,267,502
313 4,267,501

CLASS 324

60 C 4,267,503
62 4,267,504
65 R 4,267,505
158 P 4,267,506
4,267,507
225 4,267,508
244 4,267,509
249 4,267,510
458 4,267,511

CLASS 328

48 4,267,512
60 4,267,513
133 4,267,514
147 4,267,515

CLASS 330

149 4,267,516
253 4,267,517
254 4,267,518
255 4,267,519
286 4,267,520
288 4,267,521

CLASS 331

65 4,267,522
94.5 C 4,267,523
4,267,524
94.5 G 4,267,525
4,267,526
111 4,267,527

CLASS 333

12 4,267,528
4,267,529
13 4,267,530
22 R 4,267,531
33 4,267,532
151 4,267,533
153 4,267,534
165 4,267,535
186 4,267,536
231 4,267,537
262 4,267,538

CLASS 335

42 4,267,539
128 4,267,540
212 4,267,541

CLASS 337

227 4,267,542
255 4,267,543

CLASS 338

32 H 4,267,544

CLASS 339

17 C 4,266,838
75 M 4,266,840
75 MP 4,266,839
89 C 4,266,841
97 P 4,266,842
97 R 4,266,843
218 M 4,266,844
258 R 4,266,845

CLASS 340

52 R 4,267,545
58 4,267,546
65 4,267,547
146.3 AH 4,267,548
302 4,267,549
347 DA 4,267,550
384 E 4,267,551
388 4,267,552
571 4,267,553
677 4,267,554
748 4,267,555

CLASS 346

153.1 4,267,556

CLASS 350

3.71 4,266,846
6.6 4,266,847
8 4,266,848
27 4,266,849
96.14 4,266,850
96.15 4,266,851
96.20 4,266,852
4,266,853
171 4,266,854
254 4,266,855
281 4,266,856
295 4,266,857
296 4,266,858
338 4,266,859
426 4,266,860

CLASS 351

7 4,266,861
14 4,266,862

CLASS 354

5 4,266,863
15 4,266,864
46 4,266,865
84 4,266,866
293 4,266,867

CLASS 355

3 DD 4,266,868
8 4,266,869
14 D 4,266,870

CLASS 356

30 4,266,871
51 4,266,872
251 4,266,873
335 4,266,874
381 4,266,875
400 4,266,876
414 4,266,877
419 4,266,878

CLASS 357

20 4,267,557
41 4,267,558
81 4,267,559

CLASS 358

22 4,267,560
82 4,267,561
109 4,267,562
127 4,267,563

CLASS 360

72.3 4,267,564

CLASS 361

433 4,267,565
4,267,566

CLASS 362

46 4,267,567

CLASS 364

200 4,267,568
431 4,267,569
480 4,267,570
493 4,267,571
498 4,267,572
515 4,267,573
520 4,267,574
565 4,267,575
578 4,267,576
707 4,267,577
709 4,267,578
718 4,267,579
824 4,267,580
900 4,267,581
4,267,582

CLASS 365

201 4,267,583

CLASS 366

108 4,266,879
153 Re.30,610

CLASS 367

11 4,267,584
13 4,267,585

CLASS 368

73 4,267,586
85 4,267,587
93 4,267,588
109 4,267,589

CLASS 369

41 4,266,783
77 4,266,784
216 4,266,785

CLASS 370

3 4,267,590
11 4,267,591
29 4,267,592
62 4,267,593

CLASS 371

20 4,267,594

CLASS 375

95 4,267,595

CLASS 400

550 4,266,880

CLASS 401

32 4,266,881

CLASS 403

14 4,266,882
134 4,266,883

CLASS 404

122 4,266,884

CLASS 405

109 4,266,885
169 4,266,886
196 4,266,887
202 4,266,888
223 4,266,889
286 4,266,890
291 4,266,891
293 4,266,892

CLASS 409

206 4,266,893
232 4,266,895
283 4,266,894
299 4,266,896

CLASS 410

113 4,266,897

CLASS 411

167 4,266,591
307 4,266,590

CLASS 414

24.5 4,266,898
24.6 4,266,899
285 4,266,900
305 4,266,901
332 4,266,902
428 4,266,903
460 4,266,904
542 Re.30,611
627 4,266,905
686 4,266,906
687 4,266,907
690 4,266,908
700 4,266,909
735 4,266,910

CLASS 416

9 4,266,911
141 4,266,912

CLASS 417

63 4,266,914
269 4,266,913

CLASS 418

126 4,266,915

CLASS 422

53 4,267,148
65 4,267,149
103 4,267,150
105 4,267,151
111 4,267,152
249 4,267,153
4,267,154

CLASS 423

235 4,267,155
242 4,267,156
303 4,267,157
329 4,267,158
371 4,267,159
456 4,267,160
462 4,267,161
542 4,267,162

CLASS 424

9 4,267,163
25 D 4,267,179
44 4,267,164
48 4,267,165
4,267,166
52 4,267,167
75 4,267,168
78 4,267,169
88 4,267,170
180 4,267,171
184 4,267,172
243 4,267,173
244 4,267,174
4,267,175
246 4,267,176
4,267,177
250 4,267,178
251 4,267,180
4,267,181
260 4,267,182
263 4,267,183
4,267,184
267 4,267,185
272 4,267,186
274 4,267,187
4,267,188
4,267,189
4,267,190
285 4,267,191
308 4,267,192
309 4,267,193
315 4,267,194

CLASS 425

62 4,266,916
64 4,266,917
66 4,266,918
102 4,266,919
133.1 4,266,920
158 4,266,921
182 4,266,922
356 4,266,923
372 4,266,924
387.1 4,266,925
4,266,926
526 4,266,927
584 4,266,928

CLASS 426

2 4,267,195
49 4,267,196
69 4,267,197
332 4,267,198
589 4,267,199
595 4,267,200

CLASS 427

27 4,267,201
40 4,267,202
48 4,267,203
68 4,267,204
93 4,267,205
128 4,267,206
129 4,267,207
154 4,267,208
199 4,267,209
226 4,267,210
228 4,267,211
240 4,267,212
292 4,267,213
341 4,267,214
372.2 4,267,215
397.8 4,267,216

CLASS 428

11 4,267,217
35 4,267,218
90 4,267,219
96 4,267,220
121 4,267,221
150 4,267,222
172 4,267,223
216 4,267,224
223 4,267,226
234 4,267,227
297 4,267,228
324 4,267,229
336 4,267,230
379 4,267,231
4,267,232
389 4,267,233
403 4,267,234
407 4,267,235
413 4,267,236
422 4,267,237
4,267,238
425.1 4,267,239
484 4,267,240
645 4,267,241

CLASS 429

104 4,267,242
136 4,267,243
213 4,267,244

CLASS 430

97 4,267,245
98 4,267,246
120 4,267,247
122 4,267,248
187 4,267,249
214 4,267,250
224 4,267,251
225 4,267,252
4,267,253
245 4,267,254
4,267,255
251 4,267,256
270 4,267,257
4,267,258
296 4,267,259
302 4,267,260
322 4,267,261
463 4,267,262
469 4,267,263
505 4,267,264
523 4,267,265
530 4,267,266
533 4,267,267

CLASS 431

20 4,266,929
263 4,266,930

CLASS 432

105 4,266,931
194 4,266,932

CLASS 433

82 4,266,933
85 4,266,934
116 4,266,935

CLASS 434

114 4,266,936

CLASS 435

2 4,267,268
4,267,269
7 4,267,270
4,267,271
4,267,272
44 4,267,273
253 4,267,274
272 4,267,275
291 4,267,276

CLASS 455

18 4,267,596
76 4,267,597
78 4,267,598
115 4,267,599
4,267,600
165 4,267,601
182 4,267,602
186 4,267,603
193 4,267,604
266 4,267,605
603 4,267,606

CLASS 474

205 4,266,937
227 4,266,435

CLASS 493

219 4,266,469

CLASS 521

103 4,267,277

CLASS 525

2 4,267,278
17 4,267,279
56 4,267,280
61 4,267,281
86 4,267,282
89 4,267,283
99 4,267,284
145 4,267,285
176 4,267,286
271 4,267,287
438 4,267,288
444 4,267,289
465 4,267,290

CLASS 526

62 4,267,291
79 4,267,292
116 4,267,293
125 4,267,294
264 4,267,295

CLASS 528

15 4,267,296
18 4,267,297
34 4,267,298
48 4,267,299
92 4,267,300
93 4,267,301
103 4,267,302
171 4,267,303
193 4,267,304
199 4,267,305
226 4,267,306
293 4,267,307
395 4,267,308
413 4,267,309
499 4,267,311

CLASS 536

17 A 4,267,312
18 4,267,313
53 4,267,314

CLASS 542

400 4,267,315
416 4,267,317
422 4,267,318
427 4,267,316
434 4,267,319

CLASS 544

22 4,267,320
030 4,267,321
180 4,267,322
236 4,267,323
262 4,267,324
285 4,267,325
313 4,267,326
336 4,267,327
394 4,267,328

CLASS 546

4 4,267,329
51 4,267,330
85 4,267,331
89 4,267,332
170 4,267,333
206 4,267,334
257 4,267,335
302 4,267,336

CLASS 548

119 4,267,337
143 4,267,338
154 4,267,339
187 4,267,340
206 4,267,341
216 4,267,342
220 4,267,343
227 4,267,344
233 4,267,345
262 4,267,346
4,267,347
330 4,267,348
339 4,267,349
354 4,267,350

CLASS 549

19 4,267,351

CLASS 560

12 4,267,352
24 4,267,353
39 4,267,354
43 4,267,355
4,267,356
53 4,267,357
75 4,267,358
104 4,267,359
111 4,267,360
118 4,267,361
174 4,267,362
183 4,267,363
4,267,364
205 4,267,365
231 4,267,366

CLASS 562

503 4,267,367
4,267,368
4,267,369
4,267,370

CLASS 564

188 4,267,371
205 4,267,372
428 4,267,373
509 4,267,374

CLASS 568

57 4,267,375
344 4,267,376
374 4,267,377
376 4,267,378
385 4,267,379
4,267,380
419 4,267,381
442 4,267,382
454 4,267,383
462 4,267,384
479 4,267,385
480 4,267,386
568 4,267,387
642 4,267,388
697 4,267,393
750 4,267,389
751 4,267,390
4,267,391
4,267,392
792 4,267,394
819 4,267,395
851 4,267,396
899 4,267,397

CLASSIFICATION OF DESIGNS

D2—	28	259,145		85	259,158		385	259,171	D10—	15	259,184	D14—	64	259,196		153	259,208
	184	259,146		114	259,159	D9—	246	259,178		26	259,185	D15—	122	259,197	D24—	10	259,209
	237	259,147		127	259,160		346	259,176		32	259,186	D16—	39	259,198		23	259,210
	240	259,148		157	259,161		370	259,213		106	259,187	D17—	14	259,199		50	259,211
	309	259,149		164	259,162		389	259,172	D11—	27	259,188	D18—	7	259,200		53	259,212
	320	259,150		234	259,163			259,181	D12—	53	259,189			259,201	D25—	91	259,214
	383	259,151		251	259,164		401	259,173		100	259,190	D21—	134	259,202		97	259,215
	427	259,152	D7—	13	259,165		431	259,175		146	259,191		184	259,203	D26—	118	259,216
D3—	66	259,153		21	259,166		432	259,177		157	259,193	D22—	7	259,204	D27—	09	259,217
D6—	75	259,154		76	259,167		435	259,182		158	259,192		25	259,205	D30—	02	259,218
	31	259,155		123	259,168		450	259,183		159	259,194	D23—	139	259,206	D59—	2 B	259,219
	36	259,156		194	259,169		451	259,180		205	259,195		148	259,207	D99—	49	259,174
	61	259,157	D8—	382	259,170		453	259,179									

CLASSIFICATION OF PLANTS

P.—	9	4,711		11	4,712		26	4,713		27	4,714		68	4,715		74	4,716

GEOGRAPHICAL INDEX

OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

6 :	4,266,774		4,266,842		4,266,550		4,266,489		4,267,417	23 :	4,267,268
	4,266,959		4,266,855		4,266,612		4,266,510		4,267,418	24 :	4,266,304
01 :	4,266,406		4,266,889		4,266,620		4,266,586		4,267,443		4,266,548
02 :	4,266,359		4,266,890		4,266,625		4,266,589		4,267,545		4,266,653
04 :	4,266,350		4,266,914		4,266,676	16 :	4,266,448		4,267,579		4,266,669
	4,266,358		4,266,924		4,266,826		4,266,899		4,267,584		4,266,878
	4,266,401		4,266,938		4,266,923		4,267,432		4,267,593		4,267,038
	4,266,551		4,266,951		4,267,056		4,267,500	18 :	4,266,319		4,267,132
	4,266,781		4,266,964		4,267,276	17 :	Re.30,612		4,266,378		4,267,182
	4,267,057		4,266,965		4,267,434		4,266,298		4,266,487		4,267,513
	4,267,460		4,266,991		4,267,446		4,266,317		4,266,492		4,267,514
	4,267,468		4,266,996	09 :	4,266,340		4,266,318		4,266,587		4,267,530
	4,267,501		4,267,001		4,266,480		4,266,320		4,266,602		4,267,537
06 :	Re.30,605		4,267,003		4,266,544		4,266,336		4,266,618		4,267,538
	4,266,305		4,267,011		4,266,606		4,266,342		4,266,640		4,267,551
	4,266,307		4,267,012		4,266,844		4,266,347		4,266,645	25 :	4,266,299
	4,266,310		4,267,019		4,266,973		4,266,348		4,266,660		4,266,313
	4,266,380		4,267,036		4,267,134		4,266,367		4,266,784		4,266,332
	4,266,393		4,267,045		4,267,331		4,266,381		4,266,793		4,266,339
	4,266,403		4,267,049		4,267,342		4,266,384		4,266,961		4,266,633
	4,266,425		4,267,062		4,267,358		4,266,404		4,266,981		4,266,686
	4,266,428		4,267,081		4,267,372		4,266,427		4,267,074		4,266,704
	4,266,430		4,267,088		4,267,435		4,266,454		4,267,240		4,266,728
	4,266,443		4,267,109	10 :	4,266,409		4,266,504		4,267,286		4,266,814
	4,266,453		4,267,165		4,266,498		4,266,505		4,267,305		4,266,849
	4,266,459		4,267,168		4,266,846		4,266,515		4,267,335		4,266,869
	4,266,468		4,267,171		4,266,919		4,266,542		4,267,528		4,266,882
	4,266,470		4,267,196		4,267,145		4,266,557	19 :	4,266,309		4,266,936
	4,266,500		4,267,197		4,267,184		4,266,576		4,266,315		4,266,987
	4,266,536		4,267,205		4,267,185		4,266,608		4,266,626		4,267,008
	4,266,537		4,267,209		4,267,190		4,266,628		4,266,785		4,267,010
	4,266,558		4,267,234		4,267,294		4,266,665		4,266,906		4,267,022
	4,266,559		4,267,235		4,267,310		4,266,670		4,266,909		4,267,023
	4,266,574		4,267,261	11 :	4,267,438		4,266,671		4,266,916		4,267,043
	4,266,619		4,267,289	12 :	4,266,388		4,266,697		4,266,917		4,267,137
	4,266,622		4,267,308		4,266,473		4,266,707		4,267,288		4,267,151
	4,266,672		4,267,359		4,266,495		4,266,716		4,267,592		4,267,153
	4,266,701		4,267,363		4,266,543		4,266,726	20 :	4,266,617		4,267,223
	4,266,714		4,267,383		4,266,600		4,266,798		4,266,693		4,267,251
	4,266,715		4,267,451		4,266,610		4,266,812		4,266,755		4,267,252
	4,266,740		4,267,490		4,266,759		4,266,825		4,266,835		4,267,253
	4,266,751		4,267,506		4,266,819		4,266,895		4,266,908		4,267,254
	4,266,752		4,267,509		4,266,864		4,266,897		4,267,270		4,267,255
	4,266,757		4,267,523		4,266,871		4,266,927	21 :	4,266,545		4,267,256
	4,266,765		4,267,550		4,266,881		4,266,988		4,266,561		4,267,272
	4,266,767		4,267,561		4,267,366		4,267,032		4,266,659		4,267,282
	4,266,770		4,267,564		4,267,428		4,267,072		4,266,808		4,267,290
	4,266,776		4,267,575		4,267,488		4,267,224		4,266,880		4,267,295
	4,266,780		4,267,580		4,267,594		4,267,243		4,266,956		4,267,324
	4,266,786		4,267,596		4,267,598		4,267,269		4,267,449		4,267,413
	4,266,791		4,267,600		4,267,599		4,267,285		4,267,462		4,267,452
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DESIGN PATENTS

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05 : 259,189
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259,163
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259,210
56 : 259,182

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06 : 4,716

24 : 4,711

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